



UNIVERSITY OF TWENTE.

The maturity of the purchasing process of municipalities

A research to find out the current and desired maturity level of the purchasing process of municipalities in the Netherlands. The other aim of this research is to find out the influence factors of the maturity level.

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Number of pages:
Number of words: 15.822

Enschede, 13th July 2020

Abstract

Content research: At the moment it is unclear how municipalities have organized their contract management and purchase to pay (P2P) process. To be able to justify the tendering procedure, municipalities must have insight into the purchasing process. It is important to know how the process is structured and how to continuously improve its design. This will allow municipalities to gain optimal benefits from a well-designed purchasing process.

This research investigates the current and desired ambition maturity level of the purchasing process of municipalities in the Netherlands and identifies the factors that influence the level of maturity.

Instruments and sources consulted: To measure the current and the desired maturity of the purchasing process, a new maturity model was developed. The model is mainly focused on the P2P process and contract management. Additionally, it assesses the influence of culture, size, budget and time, and knowledge on the purchasing process maturity level.

Methodology: This study applies a quantitative research approach using an online questionnaire to collect data. The respondent group for the survey included purchasers and employees within the target municipalities who are familiar with the purchasing process. The questionnaire was sent to the attention of the purchasers for all 355 municipalities in the Netherlands. In total, 69 responses were received.

Findings: It turns out that the maturity level of the contract management and P2P processes of municipalities is still relatively low. However, municipalities in general do have a well-written policy and the maturity level of their decision-making process is significantly higher compared to contract management and P2P. Municipalities have strong ambitions to develop their purchasing process over the next 3 years and have the desire to further optimize it after those 3 years.

Furthermore, looking at the influencing factors, more than one-half of participating municipalities stated that they did not have enough budget, time or knowledge available for optimizing contract management and P2P. It seems that the factors budget and time, knowledge, size, and culture all have an effect on the maturity level of the purchasing process of municipalities.

Table of content

Abstract	2
Table of content.....	3
1. Introduction	5
1.1 The unidentified maturity level of the purchasing process of municipalities in the Netherlands.....	5
2. Theoretical development of a maturity model	8
2.1 Systematic literature review to develop the maturity model	8
2.2 Purchasing process	10
2.3 Part 1: Development of a new maturity model.....	12
2.3.1 Definition of maturity models	12
2.3.2 Comparison of P2P maturity models	14
2.3.3 Comparison of contract management maturity models.....	19
2.3.4 Development of the new maturity model.....	22
2.4 Part 2: Factors influencing maturity	28
2.4.1 Identifying possible influencing factors	28
2.4.2 The possible effects of influencing factors	29
3. Methodology	32
3.1 Sampling and research population.....	32
3.2 Questionnaire.....	32
3.3 Measurement	34
3.4 Statistical methods and programs used.....	34
4. Results	37
4.1 Current level of maturity	37
4.2 Desired level of maturity	40
4.3 Influencing factors	43
5. Discussion	47
5.1 Current and desired maturity level	47
5.2 Desired maturity level	47
5.3 Effects of influencing variables on the current level of maturity	48
5.4 Practical recommendations.....	49
5.5 The practical value.....	49
5.6 Limitations and opportunities for future research	50
6. Acknowledgement.....	50
References	51
Appendix 1, overview of used articles	54

Appendix 2, content of the purchasing process.....	60
Appendix 3, defined subjects of the p2p maturity model	61
Appendix 4, comparison of the CCM-model and NICV model.....	63
Appendix 5, The survey	65
Part 1: Algemene vragen over het inkoopproces	65
Part 2: Vragen met betrekking tot het inkopen van losse bestellingen (orders).....	70
Part 3: Vragen over de contracten	76
Part 4: Vragen over specificaties voor een inkoopstelsel.....	82
Part 5: Vragen over organisatiecultuur, kennis, tijd en budget	84
Part 6: Algemene vragen	85
Appendix 6, determining the scores	87
Appendix 7, Descriptive statistics and correlation table	88
Appendix 8, open answers survey	90
Appendix 9, statistical testing	93
9.1 PLS path modeling	93
9.2 Normality check dependent variables.....	99
9.3 Spss results MANOVA	100

1. Introduction

1.1 The unidentified maturity level of the purchasing process of municipalities in the Netherlands

Research has shown that many organizations within the Netherlands have not developed contract management over the past few years (Schippersheijn, Siersema, & Huizinga, 2013, p. 34). Municipalities in particular are weak in their development and implementation of contract management procedures (Schippersheijn et al., 2013, p. 34). Schippersheijn et al. (2013) found with a sample of 15 municipalities that on average they had reached only the basic phase of contract management. In addition, Van Wijk (2014) stated that more than the half of Dutch municipalities do not apply contract management or operational procurement management. Apart from the research of Schippersheijn et al. (2013), no-large scale studies have been done to gain insights into the current design of contract management processes of municipalities in the Netherlands. In addition to this limited insight into current contract management processes, there are no insights on the extent to which municipalities want to optimize contract management.

Similarly, no information is available on the ways in which municipalities have developed their purchase to pay (P2P) processes. From conversations with P2P experts, it emerged that municipalities tend not have a well-developed P2P process. Since April 18th, 2019, municipalities have been legally required to be able to receive and process e-invoices (Digitale-overheid, 2019). Thus municipalities must develop their P2P processes, both to comply with the new law and to reap the benefits of a well-developed P2P process. However, there is also no information on the extent to which municipalities have the ambition to optimize their P2P process.

It could be concluded that there are some resources found to believe that municipalities have not developed their P2P process or contract management. However, no hard evidence is found. In addition, it is not clear what the ambition level is of municipalities in the Netherlands for optimizing their purchasing processes. Why is it important to gain insights into the current and desired maturity level of the purchasing process of municipalities?

The procurement processes of municipalities have been monitored for some time. There is a growing number of laws and standards that municipalities must comply with when purchasing. For example, sustainable procurement is important within the Netherlands. By the end of 2020, socially responsible purchasing will be the norm for all municipalities, provinces and water boards. This is the ambition of the socially responsible purchasing program that is supported by the government of the Netherlands (Rijksdienst voor ondernemend Nederland, 2020). In addition to following this norm for socially sustainable procurement, a municipality must be able to justify its tendering procedure. There are various pitfalls when it comes to procurement law that can result in the auditor's issuing a statement other than an approval at the annual audit. In order to prevent such missteps and their political consequences, it is especially important that the purchasing and tendering process be carefully documented, so that municipalities are subsequently able to properly substantiate the legitimacy of the tender and their choices (De Pagter, Merkus, & Koedooder, 2019). However, as mentioned above, it is not clear how municipalities have designed their purchasing processes and what the maturity level of these processes is. To be able to justify the tendering procedure and to gain the optimal

benefits from a well-designed purchasing process, it is important that municipalities have insights into how this process is structured and how to continuously improve the process design. Therefore, this research is conducted to assess the current and desired maturity level of the purchasing processes of municipalities in the Netherlands. An additional aim of this research is to discover which factors may have an influence on the current level of maturity. This leads to the following research question: What are the current and desired maturity levels of the purchasing processes of municipalities in the Netherlands, and which factors may have an effect on the maturity level?

There are already many procurement and maturity models available in the literature. Some of these models measure only parts of the purchasing process and will not give a clear overview of the entire purchasing process. Nevertheless, there are also maturity models made for the entire purchasing organization – for example, the maturity model of Schiele (2007). However, these models are too extensive to measure only the purchasing process with a main focus on P2P and contract management. The research would be made too broad by incorporating additional elements such as the recruitment of employees when assessing the maturity levels. Since there is no maturity model available for the for the basic purchasing process with a focus on P2P and contract management, a new look at the procurement process is necessary to develop such a maturity model.

Once a new maturity model has been developed, the current and desired maturity levels of the purchasing processes of the municipalities of the Netherlands can be measured via a survey. When optimizing the purchasing process, it needs to be clear what the points of improvement are and what the level of ambition is within a municipality. This indicates the importance of having insights into the current level of maturity and what their desired level is.

An additional goal of this research is a better understanding of how the purchase processes of municipalities are currently organized. Therefore additional information is desirable about factors which might influence the maturity level of the municipalities' processes.

The results of this research will give practitioners and academics insight into the purchasing processes of municipalities within the Netherlands. First, the new model has added practical value. The aim of the new model is to provide municipalities insight into their purchasing process. By means of the model, a municipality can measure the maturity of the purchasing process, revealing its strengths and weaknesses. Based on this maturity measurement, optimization processes can be defined to further professionalize the purchasing process. Comparing the current situation to the desired situation will reveal the gap. Second, this research provides insight into the ambitions of the purchasing departments of the municipalities. Apart from their need to conform to the new law requiring that municipalities be able to receive and process e-invoices, it is unclear what ambitions municipalities have for optimizing their purchasing process. Lastly, it provides an overview of the differences in median maturity levels between the different influencing factors.

There are few recent studies which provide insight into the maturity of the purchasing processes of municipalities within the Netherlands. The reports which are available have a small sample size: for example, there are papers describing the purchasing organization of one

municipality. Additionally, there is a paper which measures only the maturity level of contract management, with a relatively small sample size of 15 municipalities. The current research builds on existing studies and provides deeper insight into the current and desired maturity levels of the purchasing processes of municipalities. Furthermore there are no recent studies which analyse the effects of budget and time, knowledge and organizational culture on the level of maturity of the purchasing processes of municipalities. The influence of the variable “size” has been tested in relation to the quantity of items purchased but not in relation to the effects on the purchasing process design of municipalities.

First this paper describes the method used for the literature review. Within the literature review, several existing models and procedures within the purchasing process are described and evaluated. The focus is on contract management and P2P processes. The development of a new maturity model is then described. In chapter 4, possible influencing factors are described and hypotheses are presented for how maturity level could be influenced by the factors. After the literature review, the methodology used in this study is described. The results are presented in chapter 5. Finally, the key findings, theoretical contribution and recommendations are described.

2. Theoretical development of a maturity model

2.1 Systematic literature review to develop the maturity model

Answering the research question requires a review of the existing literature. A systematic literature review was conducted and serves as a theoretical framework in this research. This systematic review used the grounded theory literature review method of Wolfswinkel, Furtmueller, and Wilderom (2013). The method consists of five stages, shown in table 1, that serve as a guide to systematizing the literature.

Table 1. Five-stage grounded-theory method (Wolfswinkel et al., 2013, p. 33)

<i>Number</i>	<i>Task</i>
1. DEFINE	
1.1	Define the criteria for inclusion/exclusion
1.2	Identify the fields of research
1.3	Determine the appropriate sources
1.4	Decide on the specific search terms
2. SEARCH	
2.1	Search
3. SELECT	
3.1	Refine the sample
4. ANALYZE	
4.1	Open coding
4.2	Axial coding
4.3	Selective coding
5. PRESENT	
5.1	Represent and structure the content
5.2	Structure the article

The objectives of this study are to discover the current and desired level of maturity of the purchasing process of municipalities and to discover whether the level differs based on the following factors: available budget and time, organization size, available knowledge and organizational culture. To meet these objectives, two sub-questions have been formulated that require a review of existing literature:

- How can the maturity of the entire purchasing process be tested?
- What effects do the factors available time and budget, organizational culture and municipality size have on the level of maturity of the purchasing process?

The first step is to define the article inclusion and exclusion criteria for the data set (Wolfswinkel et al., 2013, p. 44). The articles were checked to determine whether they could contribute to answering the research question. Articles older than eight years were not used in this study because of the rapid changes in the digital environment. However, models and definitions older than 10 years may still be valid and of interest and were therefore evaluated for relevance.

The second step is to identify the fields of research. Wolfswinkel et al. (2013, pp. 4, 54-55) state that it is ideal when the chosen fields contain the most relevant texts on the topic. In this study the research field are as follows: purchasing, with a special focus on P2P and contract

management; technology, with a special focus on process innovation; business management; economics; and social science, with a specific focus on culture.

During the third step, appropriate sources are chosen (Wolfswinkel et al., 2013, p. 55). In this study the following databases were used: Scopus, Google Scholar and FindUT. Articles from the Association for Purchasing and Supply Management (NEVI) were also used. This online platform is the primary source of knowledge for purchasing and supply management professionals. Only trustworthy articles were selected: that is, articles that were peer reviewed by experts. Additionally, a number of online study books and study books in possession of the author were used in this literature review.

The fourth step is to formulate the keywords. The keyword phrases used to answer the questions are as follows: “procure to pay”, “contract management maturity”, “maturity model development”, “effect of organization size”, “organizational culture” and “importance of knowledge process optimization”.

After the keywords were determined, the actual search for relevant articles was conducted. Within Google Scholar, the advanced search option was used; the English website was used with the exact keyword phrases. Table 2 lists the number of articles found for each keyword phrase.

Table 2. Number of articles found

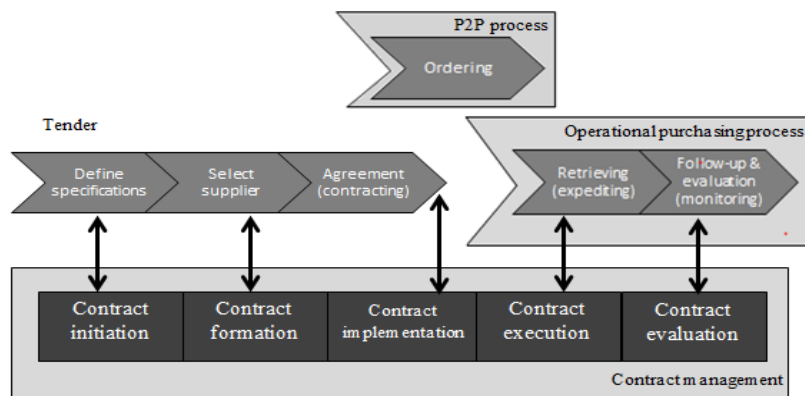
Keywords	Number of articles	Percentage
Procure to pay	320	0.77%
Contract management maturity	377	0.91%
Maturity model development	1,850	4.46%
Effect of organization size	12,300	29.68%
Organizational culture	10,800	26.06%
Importance of knowledge process optimization	15,800	38.12%
Total	41,447	100%

The next step is to select the relevant articles (Wolfswinkel et al., 2013, p. 88). This was done by removing duplicate items, removing articles that were not accessible and selecting the most relevant articles for the research topic by title and abstract. The remaining articles were scanned, and 38 articles were found to be relevant for this study. Additional relevant sources were found within the references for these 38 articles. Some of these additional articles were older than 10 years but were considered to be relevant for this research. An overview of the articles used is given in appendix 1.

2.2 Purchasing process

To answer the question “How can the maturity level of the purchasing process be tested?” it is important to review the existing models and processes within the purchasing process. van Benten (2018) states that contract management and operational management are important factors in the purchasing process, visualized by van Benten (2018) in appendix 2. In addition, Okrent and Vokurka (2004, p. 639) describe the dimension “order” of the purchasing process as the P2P process. It can be concluded that the purchasing process mainly consists of contract management, operational management and the P2P process, as shown in figure 1.

Figure 1. Content of the purchasing process



First, the P2P process has been developed for the “order” dimension of the purchasing process of Van Weele (1988). This process is mostly used for purchases without a contract and is based on the operational activities within a company (Dachyar & Praharani, 2016, p. 215). The P2P process starts with the purchase of a specific product or service (Van der Pouw & Tatan, 2015, p. 27). When the product or service is received, it must be checked to determine whether it fits the expectations, and if so, it needs to be approved. After the product or service is approved, it must be paid for (Dumas, La Rosa, Mendling & Reijers, 2018). The literature contains no relevant maturity models for the P2P process. However, the literature does present maturity models for the P2P process developed by consultancy bureaus and experts. Additionally, Cuylen and Breitner (2015, p. 121) develop a maturity model of the e-invoicing part of the P2P process.

Second, operational procurement management consists of contract execution and contract evaluation of the purchasing process. Within operational procurement management, Knoetser (2013) describes the importance of a contract file. It is significant to actualise, this file and to involve all the important information about the contract terms. There are several ways to organize the information within a contract file. First, the contracts can be organized based on their characteristics. Knoetser (2013) has identified several important characteristics by which contracts can be organized. However, Turner (2004) stated: “Some contract forms require very intrusive systems for monitoring and control, leading to high transactions costs, while others allow light control” (p. 76). In addition Drion and Sprang (2012) argue that not all suppliers have the same importance. For example, the rent of a building often has a large value but is not controllable with critical performance indicators. Hirschheim, Heinzl, and Dibbern (2009)

claim that actively monitoring all the contracts at the same level does not save costs. Therefore, only selected contracts and suppliers should undergo a higher level of supplier management and performance management. Contracts can also be organized based on risks, value and monetary value. The Kraljic matrix and the ABC analysis are proper models for organizing contracts according to these factors (Bos, 2014, pp. 62-63). Additionally, reports and assessments of the contracts are part of operational management. These components can be used for strategic purchasing and to involve supplier management and performance management. With supplier management, the involvement of the suppliers in the process is important (Bos, 2014, pp. 7, 117, 111). In addition, Knoetser (2013) describes that communication is a significant factor in supplier management. Furthermore, Chen, Paulraj, and Lado (2004, p. 506) state that supplier management is an important factor in performance management. With supplier management, organizations are able to foster long-term, cooperative relationships to achieve greater supplier responsiveness. Because of the greater responsiveness and collaboration, a higher level of performance can be achieved (Chen et al., 2004, p. 508). Frequent interaction, critical performance indicators, communication, measurement and evaluation are important factors within performance management (Bos, 2014; Chen et al., 2004).

Bos (2014, p. 1515) suggests that operational procurement management is part of contract management. In terms of the purchasing process, contract management is a way of purchasing with the goal of fully exploiting the possibilities of contracts (Van der Ven, 2017). Brown and Potoski (2003) state that “contracting is a highly complex process requiring multiple types of expertise from public managers” (p. 154). Van der Valk and Rozemeijer (2009, p. 66) found that active contract management is a key success factor for successful purchasing. Contract management is focused on five of the six dimensions of Van Weele’s (1988) purchasing process, shown in figure 1 (van Benten, 2018). Contract management includes contract initiation, formation, implementation, execution and evaluation (van Benten, 2018). Within contract initiation, the specification of the need and available possibilities – gathered, for example, through market research – are important. Moreover, Overgaauw (2015, pp. 15-16) and Knoetser (2013) both write of the importance of the decision-making process when insourcing or outsourcing a product or service and selecting a supplier. Within contract formation, three main steps are listed: drafting the contract, negotiating the contract terms, and assessing the terms and the agreement (Overgaauw, 2015, p. 15). Romzek and Johnston (2002, pp. 434, 436-438) mention that planning, training, communication and adequate resources are important when implementing a contract. Suppliers can devote staff and time to develop appropriate administration systems to meet the new contract terms and responsibilities, if adequate resources are available. Suppliers without these resources find it challenging to meet the agreed terms and quality (Romzek & Johnston, 2002, p. 439).

2.3 Part 1: Development of a new maturity model


2.3.1 Definition of maturity models

To develop a new maturity model for the purchasing process, it is important to learn how maturity models are developed. Maturity models are, according to De Bruin, Freeze, Kulkarni, and Rosemann (2005) and Mettler, Rohner, and Winter (2009, p. 338), conceptual models which compare and evaluate the maturity of a few selected dimensions. Within a maturity model, a sequence of maturity levels is established, and for each level specific competencies, characteristics and capabilities must be met. These models support a company in identifying the status quo, help them develop an improvement path and allow them to control the progress of optimization (Poeppelbuss, Niehaves, Simons, & Becker, 2011, p. 506). Maturity models help an organization with, among other things, identifying strategies for quality improvement and cost reduction that help the company realize a competitive advantage (Poeppelbuss et al., 2011, p. 506).

Cuylen and Breitner (2015, p. 118) describe four phases in developing a new maturity model. The first phase is to identify the problem. In this research the problem can be identified as follows: There are many procurement systems developed for different parts of the purchasing process. Over time these systems have been optimized so that one system can serve for the entire purchasing process. However, the proper type of system for a specific level of the purchasing process varies with the maturity level of the purchasing process. Nonetheless, no purchasing process maturity models have been found with a specific focus on P2P and contract management. All models found apply to only parts of this process or are models with a much broader scope. Therefore, a new maturity model must be developed to measure the maturity of the entire purchasing process.

The second phase of the Cuylen and Breitner (2015) model describes “the comparison of existing maturity models and determination of development” (p. 119). Subsequent sections of this thesis compare P2P and contract management maturity models. The capability maturity model (CMM) is used to determine the strategy for designing a new maturity model. The CMM provides objective measures for a development process, including the strategies for improvement. Lutteroth, Luxton-Reilly, Dobbie, and Hamer (2007) state that “CMM tries to define the key elements of an effective process and outlines how to improve suboptimal processes, i.e. the evolution from an ‘immature’ process to a ‘mature, disciplined’ one” (p. 2). The CMM is also useful for meeting goals such as cost reduction, functionality and product quality (Lutteroth et al., 2007, p. 22).

Table 3. Overview of the maturity levels based on CMM maturity levels (Lutteroth et al., 2007)

	Ad Hoc	Basic	Standardized	Integrated	Optimization
Consistence	* Poorly controlled * Informal process	* Management and planning are based on earlier similar projects. * A project management system	* Documentation * Standardized process	* Well-defined measurements and goals * Well-controlled process	* Continuous improvement * Data collection about process effectiveness and benefits of innovations and proposed changes
Organizational reliance to achieve performance	Organizations rely on capabilities of individuals.	Organizations rely on successful practises of earlier projects that may be repeated.	Organizations rely on effective management software practises and a well-characterised and understood process.	Organizations rely on performance measurement and evaluation.	
Performance dependence	Performance depends on knowledge and skills, leading to unpredictable quality, functionality and costs.	Performance depends on oversight, requirements management, planning and configuration management.	Performance depends on the level of the standardized process, the software, and having the knowledge and skills required to fulfil the roles in the process.	Performance depends on evaluation and a well-controlled process.	

The CMM comprises four levels, shown in table 3. The ad hoc level is the lowest level and refers to a poorly controlled and informal process. Organizations at this level rely on the capabilities of individuals, regardless of whether those individuals do their work well. Performance depends on the knowledge, skills and motivation of these individuals, leading to unpredictable quality, functionality and costs (Lutteroth et al., 2007, p. 33).

The second level is called the basic level and describes organizations in which good performance is repeatable. There is a project management system in place, and management and planning of new projects is based on experiences with earlier, similar projects. This means that successful practises achieved with these earlier projects may be repeated. Oversight, requirements management, planning and configuration management are the key areas in this level (Lutteroth et al., 2007, p. 33).

At the third level, the process used in an organization is documented and standardized. Effective management software practises are integrated. A well-characterised and well-understood process is available, and adaption and development are attended to. In addition, knowledge and skills required to fulfil the roles in the process are shared with others.

The fourth level describes a well-controlled process with well-defined measurements and goals. Policies are in place to measure productivity and quality for all significant activities.

The processes and outcomes at this level are predictable and have predictable qualities (Lutteroth et al., 2007, p. 33).





Last but not least is the optimized level. At this level the entire organization is focused on continuous improvement. Data is collected about process effectiveness and benefits of new innovations and proposed process changes.

2.3.2 Comparison of P2P maturity models

In developing a new maturity model for the purchasing process, it is important to first compare existing models. In this section, several P2P process maturity models are presented. These models are evaluated separately and then compared to each other. Finally, significant dimensions are defined for a new maturity model.

First, Werngren (2016), president of the International Association of Microsoft Channel Partners, created the P2P maturity model displayed in figure 2. This model consists of four maturity levels divided into ten dimensions. When the model is compared to the CMM, it can be concluded that the four levels mainly correspond with each other. The Werngren P2P maturity model provides in-depth detail on many specific subjects. However, some dimensions are not clearly described for certain levels, which can be seen as a limitation of this maturity model.

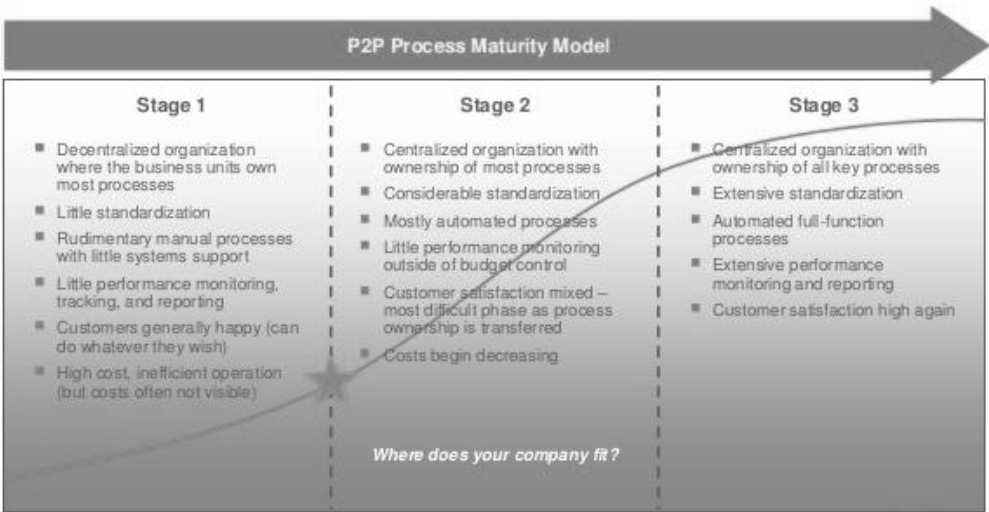
Figure 2. P2P maturity model of Werngren (2016)

	Basic 	Reactive 	Proactive 	Dynamic 
Joint business planning	None	Ad hoc	Activity based	Annual plan with regular follow-up
Leads and pipeline	No sharing	Ad hoc, no structure	Share specific campaigns, some structure but outcome not measured	Shared process to generate leads, scheduled pipeline reviews, in-person meetings
Agreement	No template	Rely on handshake or deal-specific contract	Letter of intent	Formal contract that defines all aspects of the relationship
Sales compensation	No compensation for partnering	Ad hoc compensation for partnering	Alignment of referral and project-based compensation	Rationalized campaign-based compensation
Market messaging	None	Only when asked or in response to an opportunity	Ad hoc messaging; recognition of partners and capabilities	Fully integrated marketing
Geography	Locally only	Locally only	Gain access to markets in other geographies	Strategically use partnering for broader geographical coverage
Resource utilization	Subcontractor	Opportunity based	Predefined rates for shared resources; access to architects for sales activities	Integrated resource planning covering multiple competencies
Readiness and certification	No plan	Ad hoc, opportunity based	Joint partner training in overlapping areas, joint planning to reduce overlaps	Formal plan to earn certifications, use strength in combined advanced certifications to win customers
Product and customer support	None	Ad hoc as customers report problems; may have spreadsheet tracking system	Single point of contact (SPOC) for support; scheduled meetings to review customer and product issues	SPOC for support with shared CRM to proactively resolve and track customers and product issues
Customer relationships and satisfaction	None	Ad hoc, some 1:1 customer meetings to understand experience with each partner	Proactive management of customer satisfaction; shared references	Shared responsibility and action for customer service regardless of fault

Second, Scotmadden (2018), a general management consultancy desk, created a P2P maturity model, which is presented in figure 3. This P2P process maturity model is divided into three stages through which an organization must pass on its way to having a fully developed P2P process.¹ The stages are clearly described, but no dimensions are described, and the levels do not match the CMM.

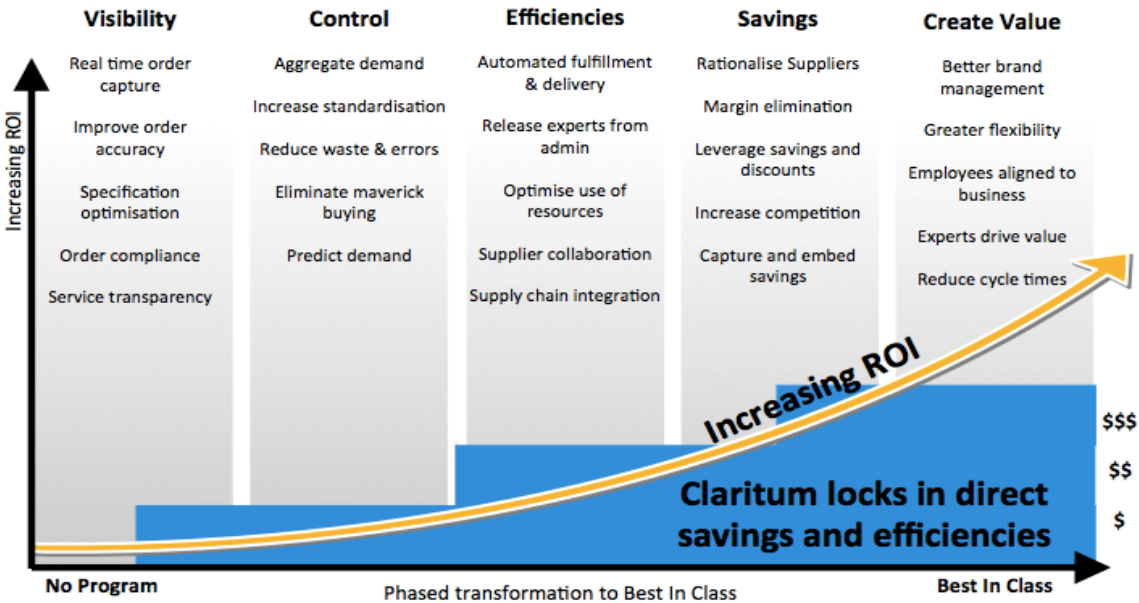
¹ <https://www.slideshare.net/scotmadden/procure-topay-process-framework>

Figure 3. P2P maturity model of Scotmadden (2018)



Finally, Sharman (2018), founder of Claritum, a cloud solution company that simplifies the procurement process, created the P2P maturity model given in figure 4. The model is divided into five levels and contains a timeline ranging from no program to best in class. The model lacks constructs on which one can base a classification. In addition, at its most detailed level, the model presents actions rather than conditions for describing a given maturity level. Therefore, the effectiveness of this maturity model compares unfavourably with that of the other two models.

Figure 4. P2P maturity model of Sharman (2018)




To determine which dimensions are important within the P2P process, we compared these models to learn where they overlap and where they differ. The maturity model of Werngren (2016) describes clear dimensions, whereas the models of Scotmadden (2018) and Sharman (2018) do not. We studied the Scotmadden (2018) model and identified the underlying dimensions within it. These dimensions are listed in appendix 3, figure 1. No straightforward

dimensions could be identified in the Sharman (2018) maturity model. We instead identified overall themes that fit the actions listed in the Sharman (2018) model. These themes are given in appendix 3, figure 2. Now that the dimensions of all maturity models have been described, it is important to identify which dimensions are most significant for the P2P process.

Since these maturity models have been developed by consultants, it is important to evaluate the subjects found with the P2P process and its goals. The goals of the P2P process are the right source, right quality of material or service, right time, right place, right quantity, right cost and right service both before and after the sale (Dachyar & Praharani, 2016, p. 215). Schoenherr (2019, p. 93) describes a set of operational modules consisting of requisition management, purchase order management and catalogue management. These modules can offer gains in cost reductions and efficiencies, and they are future focused. Requisition management is concerned with the internal request and its submission. Purchase order management describes the process, and catalogue management recognizes the importance of electronic tools and information management (Schoenherr, 2019, p. 94). In addition Xing, Versendaal, van den Akker, and de Bevere (2013, p. 296) describe the importance of monitoring the P2P process and the importance of having a system to do so. However, to derive benefit from a procurement system, an organization must have a purchasing process that has reached the appropriate level of maturity (Xing et al., 2013). Okrent and Vokurka (2004) state, “There is one major variant to this key business factor: supplier managed inventory (SMI) where the ‘Procure’ is a negotiated agreement to automatically supply the company with specified products or components under certain conditions and the ‘Pay’ is the automated payment associated with the receipt of those materials” (p. 639). Procure implies the importance of the supplier selection, involvement and the relation with the suppliers. In summing up the literature, the following subjects can be identified as important in helping the P2P process achieve its goals: request and submission, information management, monitoring and systems, process and supplier involvement and relations, and performance measurement and satisfaction.

Table 4. Organized themes of the different maturity levels

P2P maturity models:	Werngen (2016)	Scotmadden (2018)	Sharman (2018)		Found in literature:
Dimensions:	Agreement	Organization & ownership	Ownership	Important subjects for a well-developed p2p process to gain the achievement of its goals:	Request & submission
	Sales compensation	Standardization	Standardization		Information management
	Joint business planning	Costs	Collaboration		Process and supplier involvement/ relation
	Leads and pipeline		Relationships		
	Customer relation and satisfaction	Performance monitoring	Performance monitoring		Performance measuring and satisfaction
	Market messaging	Satisfaction	Costs		
	Geography	Systems	Systems/ monitoring		Monitoring and systems
	Resource utilization		Market research & Supplier selection		
	Readiness and certification		Specification needs		
	Product and customer support	 <div data-bbox="512 1216 928 1332" style="border: 1px solid black; padding: 5px;"> Always applies when purchasing. Can be seen as a general aspect of the purchasing process. </div>			

Legend:

Stripe through = those subjects are not supported by literature

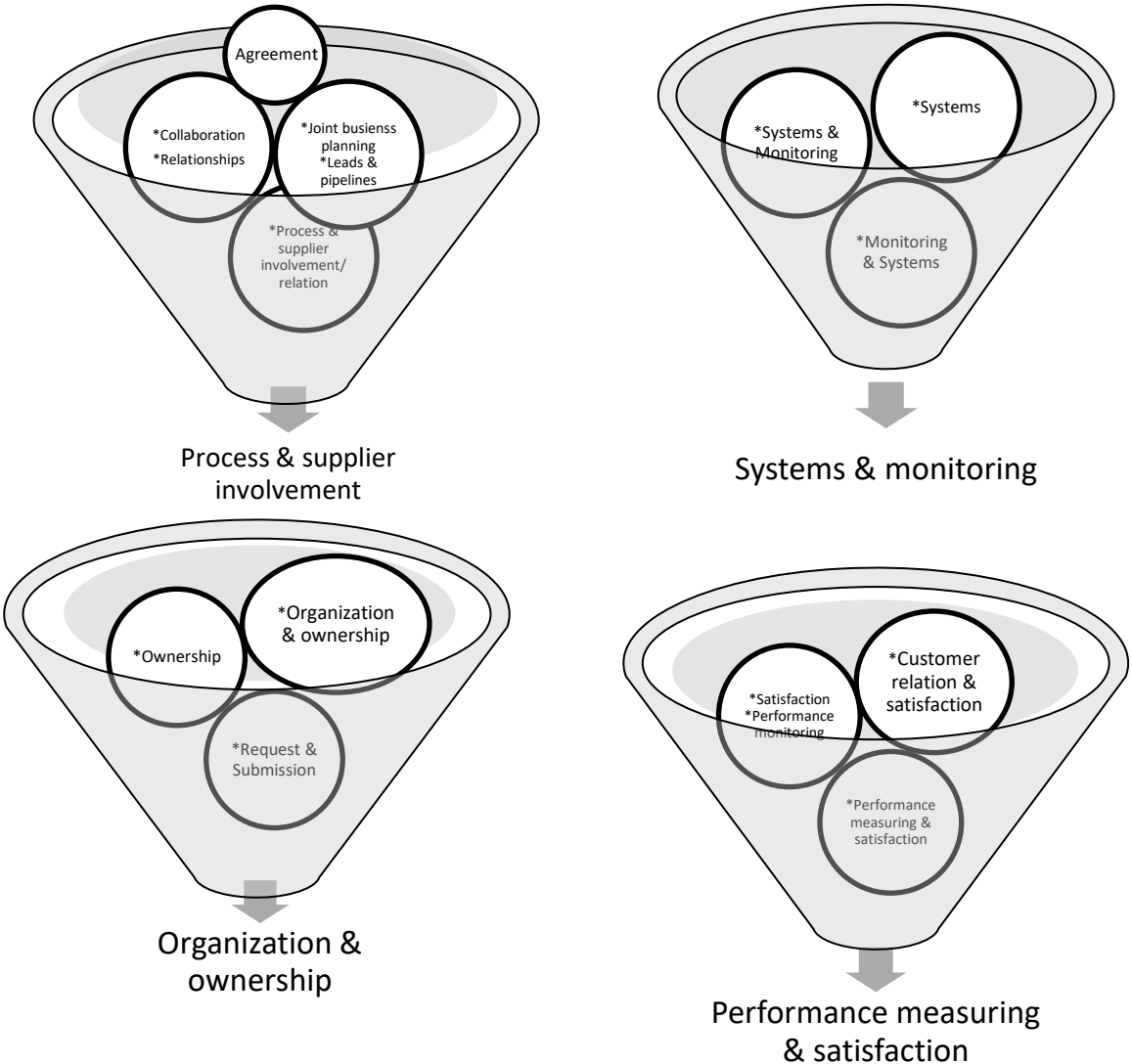
The colors indicate corresponding subjects

In table 4, the themes for a new P2P maturity model are described and classified by colour. The dimensions of Werngren’s (2016) P2P model are notably different from those in the other models and in the literature. Some of the levels are described from the point of view of the supplier based on how to effectively they respond to the customer’s P2P process. In the literature, the responses of the supplier are typically not included as part of the P2P process. As its name suggests, the P2P process describes the way a product or service is purchased by a purchasing organization (Pongsuwan, 2016, p. 45) and does not describe how a supplier should respond. Therefore, only the collaboration between supplier and customer of the P2P maturity model of Werngren (2016) are interesting for the new developed P2P maturity model. The subjects listed in the Scotmadden (2018) P2P maturity model all correspond to the literature, except for the dimension “costs”. This dimension can be seen as a goal instead of an important dimension for the new maturity model. The same applies for the cost-related actions mentioned by Sharman (2018). From the literature, the actions related to ownership, standardization, systems/monitoring, performance monitoring, collaboration and supplier relationships are the most important ones to consider for the new maturity model. In addition, Sharman (2018) included several important actions related to policy, specification needs, market research and

supplier selection. Chandrashekar et al. (2007, p. 11) argue that the procurement process may be hierarchically decomposed and that one of the first stages consists of supplier search, analysis and selection. In addition, it is important to have a clear policy for the procurement process. These actions are important within the P2P process (Cameron, 2009) but also for contract management (Knoetser, 2013). It can be stated that policy and decision making about in-sourcing and out-sourcing, between a contract or an order (Knoetser, 2013) and supplier selection (Van Pouckea & Matthijssens, 2014, p. 33) are general actions for the entire purchasing process. Therefore the new maturity model comprises three components: general, orders (P2P) and contracts (contract management). The two dimensions “policy and well-considered decision making with the sub dimensions: decision-making between a contract or an order, supplier selection and in/out sourcing” are part of the general component.

Linking all the themes and dimensions of the discussed P2P maturity models and the additional aspects of the P2P process found in literature produces the following dimensions: organization and ownership, systems and monitoring, process and supplier involvement/relations, and performance measuring and satisfaction. These are the dimensions created for the new maturity model of the purchasing process. They are visualized in figure 5.

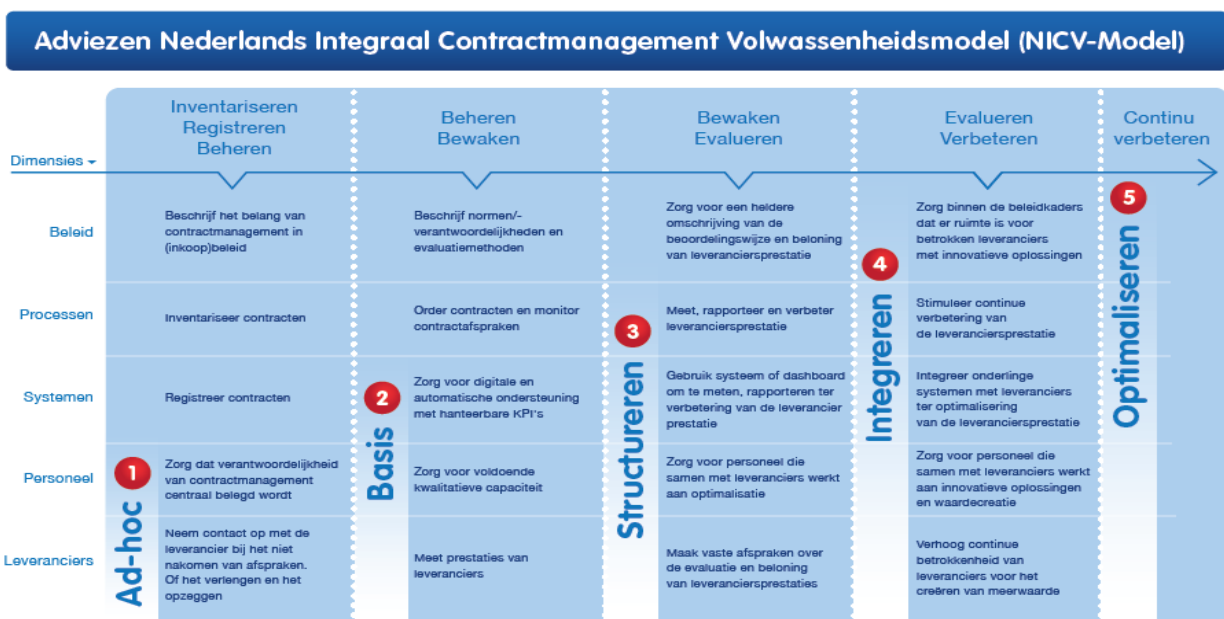
Figure 5. Dimensions of the order part



2.3.3 Comparison of contract management maturity models

A search of the literature reveals many contract management models. First, there is research available in the Dutch market titled “Handreiking contractbeheer en contractmanagement” (Bos, 2014). This is a review of how to measure the maturity of contract management within municipalities and describes the most important elements in contract management and operational management. Bos (2014) developed the “Nederlands Integraal Contractmanagement Volwassenheidsmodel” (NICV model), shown in figure 6. The NICV model is a validated instrument for measuring the maturity level of contract management. The model is developed by the Hanze University of Applied Sciences and the Dutch Purchase Centre and includes five dimensions (Bos, 2014, p. 87). With this model it is possible to determine the current level of contract management within a municipality or organization and how contract management can be improved to a higher level. The NICV model has been used several times in the literature. The maturity levels described in this model correspond to the levels described in the CMM. To test the reliability of the NICV model, we compare the model with another contract management maturity model and the literature.

Figure 6. NICV model of Bos (2014, p. 87)



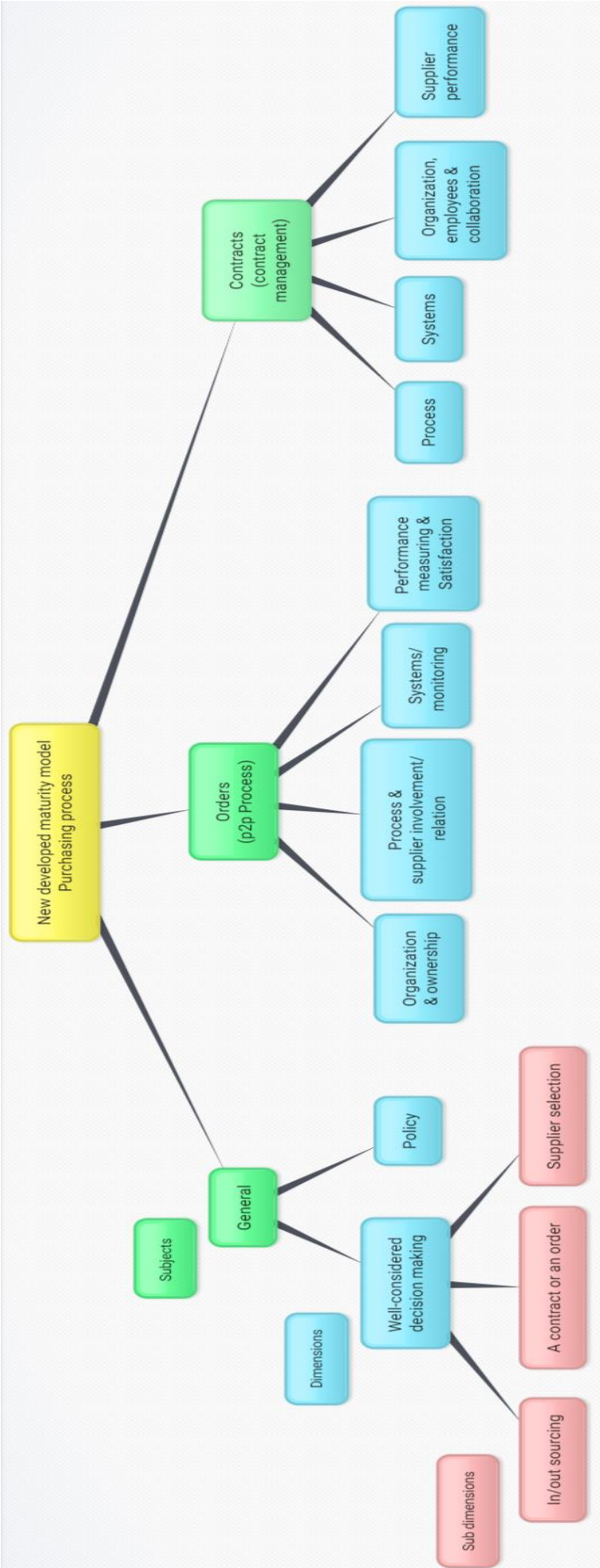
Martin (2016) wrote several articles about contract management and created a new maturity model, which is illustrated in figure 7. The model includes five levels which broadly correspond to the maturity levels described in the CMM. Martin’s maturity model features two dimensions: process and people. When zoomed in on the dimension process, the levels also describe systems and stated the importance of measuring performance. It can be concluded that the dimension process are extensive and could be divided into smaller dimensions, as in the NICV model.

Figure 7. Contract management maturity model of Martin (2016)

	Ad hoc	Basic	Standardized	Systematized	Optimized
	one-off	centralize; get control	streamline; simplify	inter-connect; modularize	plan, learn, adapt, embed
People Independent Informal Planned Oversight & Accountability	Lawyers and contract managers work autonomously	Informal contract teams	Individuals tasked with template development and maintenance	Stakeholder involvement; tactical planning Training and awareness	Management team oversight Formal strategic contract plan and optimization Establishment of center of excellence; focus on continuous improvement
Process Pre-signature --Request/Draft --Negotiate/Approve Post-signature --Managed/Audit --Optimized	No contract request process Contracts stored in multiple systems	Informal request process (eg email) Contracts collected into a single repository	Online contract request Contracts managed; standard contract profiles	Automated template selection and routing; expedited contract review Contract obligations extracted and tracked	Automated selection of standard terms; limited exception handling Contracts performance metrics monitored

We found that the most important dimensions for contract management are policy, process, systems, organization, employees and collaboration, and supplier performance. As mentioned previously, policy is also part of the P2P process. In addition, Bos (2014) and Schoenherr (2019, pp. 2, 32-33) both discussed the importance of well-considered decisions about in-sourcing or out-sourcing an order or a contract, about selecting suppliers and about determining the KPIs. Figure 8 visualizes the subjects and dimensions identified for the new maturity model.

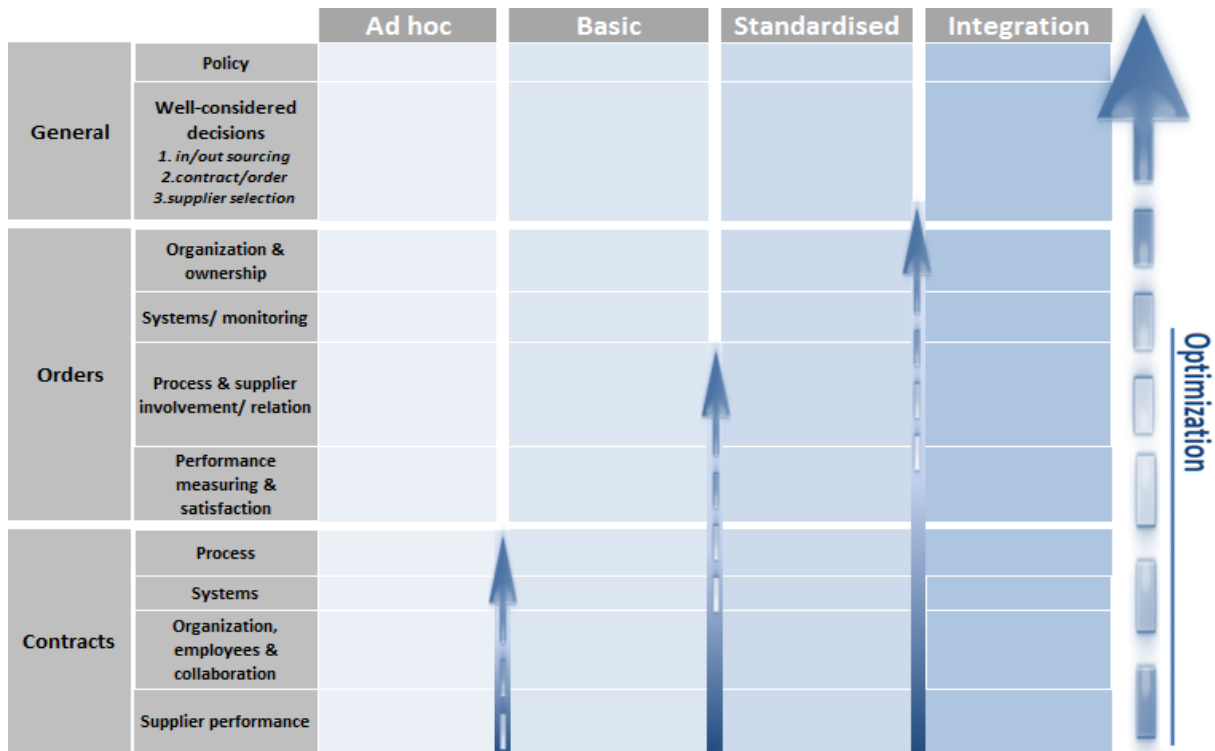
Figure 8. Visualization of the subjects and dimensions of the newly developed maturity model



2.3.4 Development of the new maturity model

At this point the three subjects – general, orders and contracts – and their corresponding dimensions are described and can be inserted in the new maturity model, shown in figure 9. In this section the features for each dimension at each level will be described.

Figure 9. First concept of the newly developed maturity model



We start with the model’s first dimension under “general”: policy. Bos (2014, pp. 17, 27) mentioned first the description of the purchasing process and its importance within an organization’s policy. Schoenherr (2019, p. 95) describes the importance of information management. Level two contains information flows that are clearly described in the policy. Bos (2014, p. 17) describes as the next maturity level the importance of noting the standards, responsibilities and evaluation methods in the policy. If applicable, the remuneration of supplier performance must also be noted within the policy. The fourth level of policy within the NICV model is described as there is enough room within the policy framework for continuous optimization.

The second dimension is well-considered decisions. Decision making about in-sourcing or out-sourcing, deciding between a contract and an order (Knoetser, 2013) and selecting a supplier (Chandrashekar et al., 2007, p. 11) are general actions for the entire purchasing process. These four decisions are sub-dimensions of the dimension “decision making”. Kaner and Karni (2004, p. 225) referred to decision making as a critical activity for an organization. Decision making determines courses of action and their effects and therefore has a significant influence on failure or success (Kaner & Karni, 2004, p. 225). The decision making maturity model of Kaner and Karni (2004, p. 242) is used to describe the levels of maturity of well-considered decision making about in-sourcing or out-sourcing, choosing a contract or an order, and selecting a supplier. The first level features some awareness of the different options, but no real

decision is made. Kaner and Karni (2004) described the second level as “general awareness; informal approach deployed in a few areas with varying degrees of effectiveness and sustainment” (p. 233). This can be translated as a situation in which the employee in charge of the new purchase has options and analysed these for suitability, but no additional information was collected to make a well-considered decision based on facts. The third level is a systematic approach in which information has been collected to make a decision based on facts. The fourth level involves ongoing refinement; the necessary information for a well-considered decision has been documented and is continuously evaluated by several people (periodic approach).

Under the subject “orders”, the first dimension is organization and ownership. Schiele (2007) said “organisational structure should be a dimension in a maturity profile, not just the ‘status’ of purchasing itself” (p. 276). Organizational structure is necessary if purchasing is to fulfil its duties (Schiele, 2007). Scotmadden (2018) described the maturity levels in moving from a decentralized organization to a centralized one. In addition, Namiri and Stojanovic (2007, p. 60) described the risk of unauthorized purchase orders and payments when there is no clear permission policy and centralized organization of the P2P process. Therefore, the permission policy is explicitly named in the new maturity model to decrease this risk. When combining these elements under the dimension organization and ownership, the first level describes a decentralized organization in which business units own most processes. The second level features a clear policy describing who is authorized to purchase what and when centralized permission is necessary. The third level refers to a centralized organization with a clear policy which covers all responsibilities in the P2P process. Finally, at the fourth level the organization lives up to this policy and is a centralized organization that owns all key processes.

The second dimension, systems and monitoring, is detailed in the following four levels. Scotmadden (2018) defined the first level in line with the literature as involving rudimentary manual processes with no system support. Cuylen and Breitner (2015) emphasized the importance of monitoring invoices, and they developed a maturity model for the e-invoicing process. For that reason the first important element that needs to be processed in a system is the invoice. At the second level, invoices are all registered in the same system. Bakar, Peszynski, Azizan, and Sundram (2016, p. 85) stated that systems can provide substantial support not only for monitoring invoices but also for communication and the purchase of services and products. Level 3 describes a situation in which all products and services are purchased via the same system, and the invoices are automatically saved within the program. Bakar et al. (2016, pp. 80-83) and Van Pouckea and Matthijssens (2014, p. 66) described the importance of system integration and its benefits. However, Themistocleous, Irani, and Love (2004, p. 294) also explained that the integration of different systems can be complicated and difficult. Therefore, level 4 involves integration of systems with main suppliers, although not all suppliers. This reduces the risk that the connected costs and time will outweigh the results.

“Process and supplier involvement/relations” is the next dimension within the maturity model. First, it is important for employees to know where to purchase a service or product (Monczka & Patterson, 2016, p. 108). Therefore, level 1 requires clarity as to where a product or service must be purchased. Second, it is important that there are clear agreements about the delivery of products or services (Monczka & Patterson, 2016). Furthermore, Monczka and Patterson (2016, pp. 119-121), Sharman (2018), and Okrent and Vokurka (2004, p. 638) all described the importance of supplier integration within the order process. Finally, in addition

to meeting the criteria for the first three levels, in level four the suppliers and employees continuously optimize the process (Themistocleous et al., 2004, p. 395).

The last dimension under the subject “orders” is “performance measurement and satisfaction”. Scotmadden (2018) described the first level, which is in line with the literature, as involving little performance monitoring, tracking and reporting. Maturity levels two and three of Scotmadden (2018) can be divided into three maturity levels. First, Scotmadden’s level two refers to a situation with little performance monitoring outside of budget control; Scotmadden’s third level features extensive performance monitoring and reporting. Werngren (2016) also mentioned the importance of discussing feedback with suppliers. Therefore, in the new maturity model, level 2 applies to a situation in which purchase orders are generally viewed and evaluated. Level 3 not only evaluates the purchase orders generally but also includes a high level of performance monitoring and reporting by suppliers. Finally, level four adds extensive performance monitoring and reporting, in addition to having feedback and performance discussed with suppliers.

Figure 10. Evaluation of the NICV model



When looking at maturity models for the subject “contracts”, Bos’s (2014, p. 87) NICV model, visualized in figure 10, is mainly in line with the literature. Many literature reviews have used Bos’s (2014) NICV model. For example, the organization NEVI has used this model and many essays have described it. The NICV model is widely evaluated in the literature and

therefore is assumed to be a valid model to use to measure the maturity level of contract management. The model has been checked with additional literature and specifically checked with the maturity model of Martin (2016).

In reviewing Bos's (2014, p. 87) model, a few notes can be made. First, looking at the dimension "suppliers", the step between level three and level four is relatively high. Knoetser (2013) and Schiele (2007, p. 282) described the importance of improvement in the measured performance of suppliers. In level four, the NICV model makes a jump not only to improve the measured performance but to also involve the continuing involvement of suppliers and the creation of added value to a higher level. This step between the two maturity levels falls within the "process" dimension. The improvement of supplier performance may affect the process but is also about the collaboration between supplier and organization and is not primarily based on the process. Therefore we believe that continuous improvement of supplier performance fits more appropriately under the dimension "suppliers" rather than "process". An adjustment is made to the new maturity model to describe level three of the dimension "suppliers": supplier performance is reported and improved, and agreements are made about evaluation and remuneration. Additionally, the name of the dimension, "suppliers", does not describe the maturity levels clearly. The maturity levels are mainly about supplier performance, thus the dimension name "suppliers" is changed in the new model to "supplier performance".

Second, the name of the dimension "employees" does not cover the maturity levels mentioned within this dimension. The details in the level descriptions are primarily about the organization and collaboration, and not about the employees. This dimension name is adjusted in the new maturity model to "organization, collaboration and employees". Lutteroth et al. (2007, p. 33) mentioned explicitly in level three the importance of a training program so that all staff can acquire the knowledge and skills required to fulfil the roles the process assigns them to. In addition, Martin (2016) mentioned the importance of training and awareness in the maturity model. Therefore, level three has been adjusted in the new maturity model. In addition, the description of the fourth level of employees in the NICV model fits better under the dimension "supplier performance", as it refers to extensive collaboration between supplier and employees to improve supplier performance. However, it also describes the importance of continuous collaboration, and Martin (2016) discussed collaboration between employees and stakeholders on innovative solutions and value creation. For this reason, level four in the new model describes continuous collaboration between employees and stakeholders on innovative solutions and value creation.

Within the dimension "process" (Bos, 2014, p. 17), levels three and four describe the importance of supplier measurement and performance. These levels fit more naturally under the dimension "supplier performance". Martin (2016) described the importance of tactical planning in a maturity model, as visualized in figure 11. However, this level is described under the dimension "people". We believe that tactical planning will help to organize processes and, for that reason, fits best within the dimension "process". In addition, Knoetser (2013) stated that evaluation is important, to determine whether the correct tendering procedure has been completed, to confirm that applicable exception handling is done well, to track market developments and to ensure awareness of the involved risks. Level four thus encompasses extensive evaluation of the tendering procedure, exception handling, market developments, the involved risks and the actions that have been taken.

Figure 11. Evaluation of the contract management maturity model of Martin (2016)

	Ad hoc	Basic	Standardized	Systematized	Optimized
	one-off	centralize; get control	streamline; simplify	inter-connect; modularize	plan, learn, adapt, embed
People Independent Informal Planned Oversight & Accountability	Lawyers and contract managers work autonomously	Informal contract teams	Individuals tasked with template development and maintenance	Stakeholder involvement; tactical planning Training and awareness	Management team oversight Formal strategic contract plan and optimization Establishment of center of excellence; focus on continuous improvement
Process Pre-signature --Request/Draft --Negotiate/Approve Post-signature --Managed/Audit --Optimized	No contract request process Contracts stored in multiple systems	Informal request process (eg email) Contracts collected into a single repository	Online contract request Contracts managed; standard contract profiles	Automated template selection and routing; expedited contract review Contract obligations extracted and tracked	Automated selection of standard terms; limited exception handling Contracts performance metrics monitored

Now that the subjects, dimensions and levels have been described, the new maturity model can be completed. Figure 12 represents the new maturity model.

Figure 12. Newly developed maturity model

The Coppa efficient purchasing model (CEP model) With a focus on P2P and contract management

COPPA		Ad hoc	Basic	Standardised	Integration
General	Policy	The purchasing process and the importance of it are described within the policy	Besides the purchasing process and its importance, the information flows are clearly described within the policy	In addition the standards, responsibilities and evaluation methods are described within the policy	After the mentioned policy descriptions, there is enough room within the policy frameworks for continuous optimization
	Well-considered decisions <i>1. in/out sourcing 2. contract/order 3. supplier selection</i>	Some awareness of the different options, but no real decision is made.	Different options were analysed for suitability, but no additional information has been collected to make a well-considered decision based on facts	A systematic approach whereby information has been collected in order to make a decision based on facts	Ongoing refinement; the necessary information for a well-considered decision has been documented and evaluated by several people (periodic approach)
	Orders	Organization & ownership	Decentralised organization where business units own most processes	Clear policy describing who is authorized to purchase what and when centralized permission is necessary	Centralized organization with a clear policy which covers all responsibilities of the p2p process
Orders	Systems/ monitoring	Rudimentary manual processes with no system support	Invoices are all registered in the same system	All products and services are purchased via the same system and the invoices are automatically saved within this system	Automatic system is available with integration of systems of main suppliers
	Process & supplier involvement/ relation	It's clear where a product/service needs to be purchased	It's clear where to purchase and there are clear agreements about the delivery of the products/services	It's clear where to purchase and agreements about delivery are available. Suppliers are integrated within the order process	In addition suppliers and employees keep optimizing the process innovation and development
	Performance measuring & satisfaction	Little to no performance monitoring, tracking and reporting	Purchase orders are generally viewed and evaluated	High level of performance monitoring and reporting of suppliers	Extensive performance monitoring and reporting feedback can be discussed with supplier
Contracts	Process	Contracts have been inventoried	The contracts have been ordered and the contracts are monitored	There is a tactical planning about the actions that need to be done merged out of the monitoring of the contracts	Extensive evaluation of the tendering procedure, exception handling, market developments, involved risks and the actions taken.
	Systems	Contracts are registered	Provide digital support with manageable KPI's	The system monitors the ordered contracts and the system contains a clear dashboard with supplier performance	Integrated systems with main suppliers and there is collaboration in order to create value
	Organization, employees & collaboration	Responsibilities of contract management are centrally invested	There is sufficient qualitative capacity	Organization provides a training program and employees work extensively together	Continuous collaboration between employees and stakeholders on innovative solutions and value creation
	Supplier performance	Suppliers are contacted in case of non-compliance with agreements and when renewing or canceling a contract	Supplier performance is measured	Supplier performance is reported and improved. There are fixed agreements about evaluation and remuneration	Increasing supplier involvement and encourage continuous improvement of supplier performance

Optimization

2.4 Part 2: Factors influencing maturity

2.4.1 Identifying possible influencing factors

To answer the question “Which factors could influence the maturity level of the purchasing process of municipalities?” additional information is needed to determine which variables could influence process optimization. Several studies have investigated the influence of different factors on process optimization, innovation and change. In his book, Hayes (2018) mentioned organizational culture and available resources, among which knowledge, budget and time have an effect on the success of optimization and change. In addition, various studies have argued that organization size can have an influence on innovation and change. These four factors came forward structurally in our literature research as influence factors on process optimization. Therefore, the influence of the four factors budget and time, knowledge, organizational culture, and organization size are investigated in this study.

Influence of the available resources:

When optimizing a business process, changes must be made within the process design. Hayes (2018) noted that optimizing and changing a process requires knowledge, time and budget. In addition, according to the experiences of Davenport (1993), “the innovation effort should be based on an organization’s capabilities and resources” (p. 31). Even when there is a clear need within an organization to redesign, most organizations fail to improve a process when they lack sufficient resources – people, funds and time – to do so (Davenport, 1993, p. 31). Therefore, a lack of knowledge, budget or time could explain a lower maturity level.

Influence of organization culture:

Aside from the resources of knowledge, time and budget needed for process innovation, Kenny and Reedy (2006, p. 11) argued that organizational culture can hinder or stimulate creativity and innovation. Organizational culture is “the set of values, beliefs, and behavioural norms that guide how members of the organisation get work done” (Yazici, 2009, p. 16). Jindal and Shaik (2015) have stated that “it’s not your ability but your attitude which makes you successful in a job” (p. 1). Culture has a substantial influence on the way people behave within an organization. Proper behavioural training can help to create a desired organizational culture which helps to ensure appropriate behaviour by employees (Jindal & Shaik, 2015, p. 55). An organizational culture guides employees on how to get work done (Yazici, 2009, p. 16). Hence it may have an influence on whether the organization wants to encourage or slow optimization (Hayes, 2018). There are different kinds of organizational culture, all of which may have different influences on the optimization of a process, with one culture encouraging optimization while another culture slows it. We used Cameron and Quinn’s Organizational Culture Assessment Instrument (OCAI; Quinn & Cameron, 2006) to determine the dominant organizational culture of municipalities.

OCAI is a validated research tool to measure the culture of an organization. Cameron and Quinn differentiate four organization cultures:

1. A **hierarchical culture** structure implies that procedures determine what people do, and managers are efficiency-oriented coordinators and inspectors. The maintenance of a smoothly running organization is most crucial. Formal rules and policy documents keep the organization together.

2. A **clan culture** implies a friendly working environment. The organization is held together by loyalty and tradition, with great involvement by the employees. Success is defined within the framework of responsiveness to customer needs and caring for people. The organization attaches great importance to teamwork, participation and consensus.
3. An **ad hoc culture** is a dynamic, entrepreneurial and creative working environment. Leaders are considered risk takers. The organization focuses on growth and tapping new sources, and it promotes individual initiative and freedom.
4. A **market culture** suggests a results-oriented organization in which the greatest objective is to complete the work. People are competitive and focused. Leaders are hard and demanding. The binder that holds the organization together is the emphasis on winning. Reputation and success are the main points of attention.

The OCAI focusses on the following factors: style of leadership, human resource management, strategic accents, the binders of the organization and success criteria.

Influence of organization size:

Finally, Akingbola, Rogers, and Baluch (2019, p. 56) indicate that the size of a non-profit organization has an influence in making change a reality. The relationship between organization size and innovation has been researched for a number of decades (Fritsch & Meschede, 2001, p. 355). Different studies have put forth different arguments about the influence of organization size on process innovation. Weitlaner and Kohlbacher (2014, p. 45) claimed that small and large organizations differ in structures, behaviours, contacts, resources and procedures: “it is generally acknowledged that organizational behaviour is influenced by a firm’s size” (p. 45).

In short, the factors budget and time, knowledge, organizational culture and organization size may affect the purchasing process maturity level of municipalities in the Netherlands.

2.4.2 The possible effects of influencing factors

In this chapter the possible effects of the influencing factors on the maturity level of the purchasing process are described.

First, it is an accepted fact that resources are needed to optimize and change a process. A budget is needed: for example, to purchase a purchasing system, training and advice. In addition, a lack of time on the part of employees will result in decreases in communication (Hayes, 2018), knowledge sharing, help given to colleagues and motivation to perform tasks (The information resources management associations, 2016). In short, when optimizing a process there must be sufficient budget and time, otherwise the performance of the business process will be limited.

Hypothesis 1: A shortage of time and budget limits the maturity level.

In addition to budget and time, knowledge is also an important resource. Rauner (2015) observed that it is often assumed that people are important and have a significant influence on the quality of a business process. Jindal and Shaik (2015, p. 11) stated that business training is becoming more essential. Therefore many organizations invest in behaviour training and education. In addition, Hayes (2018) noted that knowledge is necessary to bring about change.

When an organization does not have the knowledge needed to optimize a process, that optimization is likely to fail. Knowledge can be seen as one of the requirements for optimization and change (Hayes, 2018).

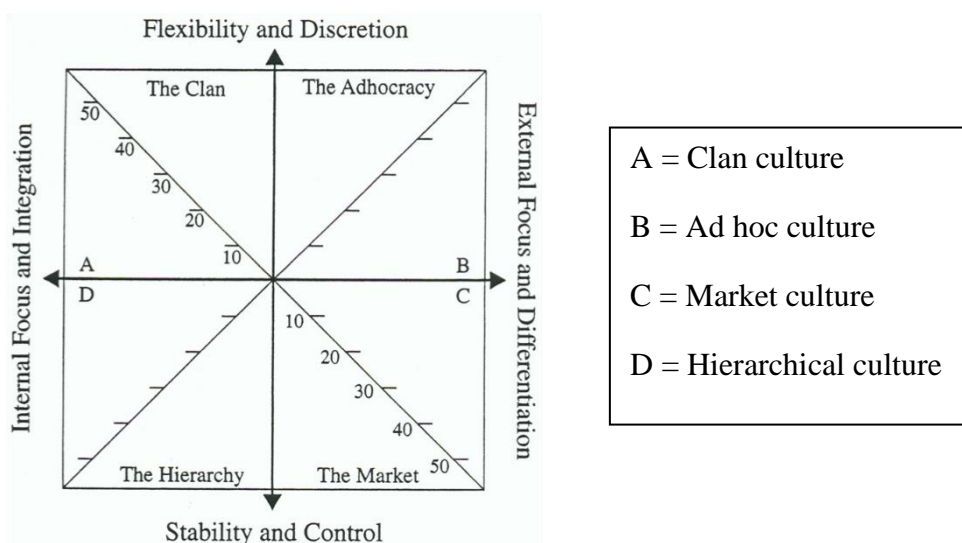
Hypothesis 2: A lack of knowledge limits the maturity level.

Additionally, the size of an organization could have an influence on the optimization of a process. Amah, Daminabo-Weje, and Dosunmu (2013) wrote, “Some researchers claim size influences organizational effectiveness and efficiency and some claim it does not” (p. 116). However, despite the conflicting findings, researchers agree on the fact that organizational size may influence the effectiveness of the organization. For example, smaller organizations are more flexible, have shorter lines of communication and make decisions more quickly (Amah et al., 2013, pp. 116-117). Therefore, we can expect that small organization size will have a positive relationship to optimization. On the other hand, Cavusgil, Calantone, and Zhao (2003) noted that large organizations often a larger set of resources available, including the resource of knowledge. The effectiveness of an organizations depends on well-designed processes within the organization (Rocchigiani & Herbel, 2013). Therefore, we expect that small and large municipalities will have a higher level of maturity than medium-sized municipalities.

Hypothesis 3: There is a U-shaped relationship between organization size and maturity level (small and large municipalities have a higher level of maturity than do medium-sized municipalities).

Finally, organizational culture may influence the maturity of a business process. Naranjo-Valencia, Jimènez-Jimènez, and Sanz-Valle (2015) found that “organizational culture is a key determinant for firm innovation and that it can actually foster it but that it can also act as a barrier against innovation” (p. 38). The OCAI can be used to measure the dominant organizational culture within municipalities in the Netherlands. In figure 13, the four dominant organizational cultures are mapped into quadrants.

Figure 13. Quadratic Organizational Culture Assessment Instrument



Naranjo-Valencia et al. (2015, p. 33) claimed that cultures with an external focus and differentiation have a focus on efficiency and achievement. Therefore, it is expected that ad hoc culture and market culture have a positive effect on optimization. This in contrast with hierarchical culture, which turns out to have difficulty adapting to changing environments (Naranjo-Valencia et al., 2015, p. 55). The effects of clan culture on optimization vary. We expect that when teamwork, motivation and an external focus are present, clan culture could have a positive influence. When they are present not, this culture could have a negative influence.

Hypothesis 4: Ad hoc culture and market culture have a positive effect on the maturity level of municipalities.

3. Methodology

A quantitative research approach was used to gain insights about municipalities' current maturity level and their desired maturity level. Additional insights were gathered about the influences of organization size, available knowledge, organizational culture and available budget and time. Queirós, Faria, and Almeida (2017) have stated, "Quantitative research focuses on objectivity and is especially appropriate when there is the possibility of collecting quantifiable measures of variables and inferences from samples of a population" (p. 370). In this research, we collected quantifiable measures using our new maturity model as an instrument. Additionally, quantitative research motivates the researcher to obtain a large sample size. Other research approaches such as laboratory research or desk work were not suitable for obtaining the desired data. On the other hand, the data could have been obtained through observational or qualitative research. However, these methods are time-consuming, and efforts to ensure a representative sample size could lead to sampling issues. Therefore, we chose a quantitative research approach.

3.1 Sampling and research population

Data was collected with the help of an online questionnaire because it would have been too time-consuming to visit all municipalities in person. In addition, Bryman and Bell (2011, p. 662) have said that an online questionnaire quickly provides a high response rate because of the attractive design. This online questionnaire was a self-administered questionnaire developed with the program Qualtrics. The survey was sent to the attention of the purchaser using the general mailing addresses of all 355 municipalities within the Netherlands. The formula of Yamane (1967) – " $n = N/(1 + N(e)^2)$ " – was used to calculate the sample size. Having 355 municipalities, the population size (N) is 355. The e within the formula indicates the desired level of precision, calculated as 100% minus the confidence level. The minimum representative sample size for a confidence level of 90% was $n = 355/(1 + 355(0.10)^2) = 78$ responses. To obtain the largest possible number of respondents, the questionnaire was sent to all Dutch municipalities. The questions were asked in Dutch, the official language of the Netherlands. The first trial of the questionnaire was distributed from July 24 to August 21. Because of the holiday period, only 19 responses were collected within these 4 weeks. Many municipalities indicated that employees would return from holidays in September, also stating there would be much work to catch up on. Additionally, municipalities are known to respond late to emails.² Given these facts, the research was delayed to increase the response. The questionnaire was distributed again from August 21 to October 23. In the end, it was difficult to obtain 78 responses. Only 69 responses were recorded, and therefore the confidence level for the sample size is 89%.

3.2 Questionnaire

The survey consisted of five parts. The first three parts were designed to learn the current maturity level, the maturity level desired within 3 years and the maturity level desired beyond 3 years. These three parts were developed based on the purchase maturity model. This model includes three subjects: general, orders and contracts. These three subjects were treated in the

² Nieuws.nl <https://reimerswaal.nieuws.nl/gemeente/4921/gemeenten-reageren-traag-op-mail/>

first three parts of the survey: general questions about the purchasing process, questions about orders and questions about contracts. All questions in these parts were set up in parallel fashion. First, the survey stepped through all the dimension levels separately. Municipalities were asked what requirements they currently met. The questions were structured as follows: for example, in the first part of the survey, “General questions about the purchasing process”, and the first dimension, “policy”, of the purchase maturity model, the first level is meant to provide a description of the purchasing process in the policy of the organization. The first question is this: “Within the municipality, there is a clear policy in which the entire procurement process with associated interests is described”. Municipalities were asked to report the extent to which their purchasing process was in line with that statement. When a municipality was assessed to have met the first level, the following questions asked about the conditions for the second level of maturity for that dimension. When a municipality did not meet the first level, the questions for the next maturity level of that dimension were skipped.

When the respondent finished the level questions for a dimension, he or she was asked to estimate the level of maturity of the municipality’s purchasing process for that dimension. The current maturity level was asked about in two different manners to increase the validity of the research. After questionnaires were submitted, we checked whether the estimate of the current maturity level fit with the answers provided about the separate levels within each dimension of the maturity model. In addition to estimating their current level of maturity, municipalities were asked about their desired maturity level 3 years out and their desired maturity level further into the future. For these questions, the maturity model was shown with each dimension indicated, and the respondent could fill in where he or she estimated the maturity level of the municipality’s purchasing process to be. Additionally, the respondent indicated what level the municipality desired to achieve within 3 years and for the future beyond 3 years.

The fourth part of the survey asked about those variables that could influence the purchasing process. The first question asked about the organizational culture within the municipality. Quinn and Cameron’s (2006) four organizational cultures were briefly described, and respondents were asked to select which description best fit the respondent’s organization. The second and third questions in the fourth part were designed to learn about available knowledge and budget and time. Respondents were asked to indicate to what degree they agreed with statements such as this: “Within our municipality there is sufficient budget and time available to optimize the purchasing process”. The size of a municipality could be found online, so there was no need to ask a question about municipality size. To learn whether important variables had been omitted within this research, an open question was asked about the main bottlenecks to optimizing the purchasing process.

The final part of the survey asked general questions. The first question asked for the province in which the municipality was located. The second and third questions asked how long the respondent had worked for the municipality and about their function within the organization. The last question gathered information about whether the respondent was knowledgeable enough to complete the survey.

3.3 Measurement

To determine a municipality's current level of maturity, the following method was used to analyse the data. This method is visualized in appendix 6. The current level of maturity was determined based on a score. In the first level of each dimension, the purchasing department does not meet particular requirements or meets only the rudimentary requirements. Hence all organizations met parts of this first level and therefore 0.25 points were always given. When the respondent agreed to a certain extent with the level, 0.5 points were given, and if the respondent agreed with the level, 1 point was given. In contrast with the first level, for the second, third and fourth levels, when a respondent did not agree, 0 points were given rather than 0.25 points. When the respondent repeatedly filled in "agree to a certain extent" to a level of a dimension, the estimated maturity level of that dimension was examined more closely, and the next question was not analysed or awarded points. When all the points were recorded, the estimate of the current maturity level filled in by each respondent in a municipality was examined more closely. It was possible for an organization to have an in-between level of maturity: for example, an organization with a maturity level of 1 almost improved to level 2. In such a case, it was possible that the respondents had already recorded that they met the requirements of level 2. Therefore, responses were divided not only by specific maturity levels but also by the degree of improvement within that level. Each level was divided into 4 progress indicators. Based on the answers to the first questions, a score was given per dimension. For example, for the first dimension under the "general" subject, respondent X got a score of 1.5 points. These points were compared with the estimated maturity level recorded by that respondent. When the respondent indicated that the organization had already met the requirements of a higher level, an additional 0.25 points were given. If the respondent indicated that the organization was at a lower level than the score given for the first questions, 0.25 points were subtracted from the initial score. When the scores differed widely, the dimension were signed with an error.

When all the data was gathered, the median of the current maturity level was determined with SPSS software to learn to what extent the municipalities differ in maturity. De Veaux, Velleman, and Bock (2016) stated, "If the histogram is symmetric and there are no outliers, we will prefer the mean. However, if the histogram is skewed or has outliers we are usually better off with the median" (p. 76). When we viewed the data, we found several outliers and observed that the data was not normality distributed. Therefore we used the median in our analysis.

All survey questions are attached in appendix 5. Appendix 7 provides a demographic overview with means and standard deviations and a correlation table of the different factors and maturities.

3.4 Statistical methods and programs used

To test the effects of the factors on the maturity level, a qualitative comparative analysis (QCA) was performed. This method enable the analysis of multiple cases in complex situations. It is useful for data with a small number of cases (Berg-Schlosser, De Meur, Rihoux, Ragin, & techniques, 2009, p. 4). The software used was the fsQCA software (Ragin, Strand, & Rubinson, 2008). The first step is to identify the different cases. In this research the influences of four factors were investigated based on the hypotheses. The second step is to translate these cases into fsQCA scores, which are presented in table 5.

Table 5. FsQCA cases and scores

FACTOR	EXPECTED INFLUENCE	ANSWER	FSQCA SCORE
ORGANIZATIONAL CULTURE	Positive	Ad hoc culture	1
	Positive	Market culture	1
	Negative	Clan culture	0
	Negative	Hierarchical	0
ENOUGH KNOWLEDGE AVAILABLE	Positive	Strongly agree	1
	Positive	Agree	1
	Neutral	Agree to some extend	0.5
	Negative	Disagree	0
	Negative	Strongly disagree	0
ENOUGH BUDGET AND TIME AVAILABLE	Positive	Strongly agree	1
	Positive	Agree	1
	Neutral	Agree to some extend	0.5
	Negative	Disagree	0
	Negative	Strongly disagree	0
ORGANIZATION SIZE	Positive	Large municipalities	1
	Negative	Medium-sized municipalities	0
	Positive	Small municipalities	1

The next step of the fsQCA method is the development of a truth table. This table shows all possible combinations and identifies the necessary conditions (see table 6). Ragin (2010) wrote that if “the total N (number of cases) is relatively small, the frequency threshold should be 1 or 2”. All configurations that had fewer than two respondents associated with them were deleted.

Table 6. Truth table

Configuration	Culture	Budget & time	Knowledge	Size	Number of respondents associated with this configuration
1	1	1	1	1	2
2	0	1	1	1	2
3	1	0	1	1	4
4	0	0	1	1	5
5	0	0	0	1	6
6	1	0	0	1	2

The last step assesses the parameters of fit by using the consistency and coverage of the cases. This measurement gives insights into the proportion of memberships in the outcome that explains each logical configuration. Every configuration has a unique contribution to the level of maturity of municipalities. The outcomes are described in the Results section of this paper.

4. Results

In this chapter the results are described, starting with the current maturity levels of municipalities in the Netherlands. This is followed by results for the desired maturity levels within 3 years and the desired long term maturity levels. Subsequently, having gained insights about the current and desired maturity levels, the median of the current maturity levels is analysed based on the following factors: organizational culture, available budget and time, available knowledge and organization size.

4.1 Current level of maturity

Figure 14 provides an overview of the current maturity levels of participating municipalities. Most of the municipalities have a maturity level between level 1 (ad hoc) and level 2 (basic). Five municipalities have optimized their purchasing process to a level between level 2 (basic) and level 3 (standardized). None of the participating municipalities have optimized the purchasing process to the third or fourth level.

Figure 14. Current maturity level

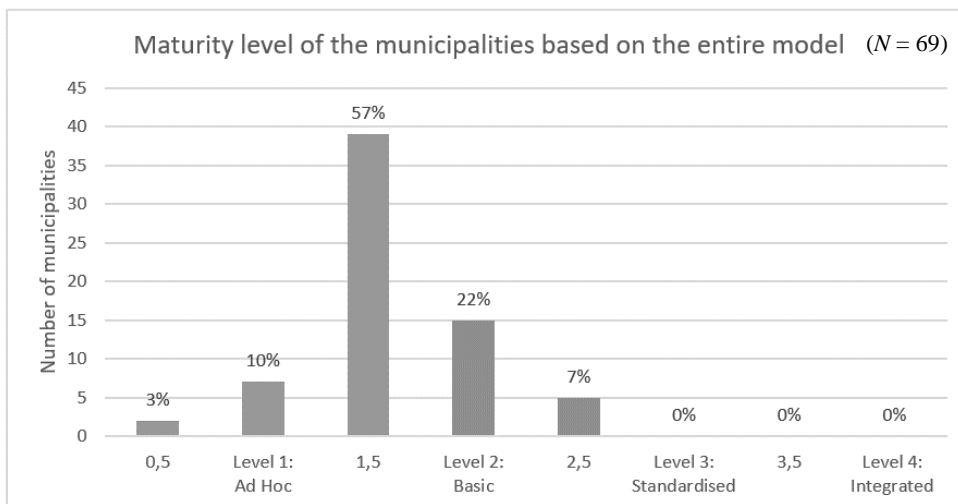


Figure 15 shows the current maturity levels per subject of the new maturity model, under the three subjects “general”, “orders” and “contracts”. Most municipalities have a higher level of maturity for “general” than for “order” or “contract”. There is also a difference in maturity between “order” and “contract”, although this difference is smaller than the difference between these two subjects and “general”. Municipalities tend to have a lower level of maturity in their contract management compared to their P2P process.

Figure 15. Current maturity level by model subject

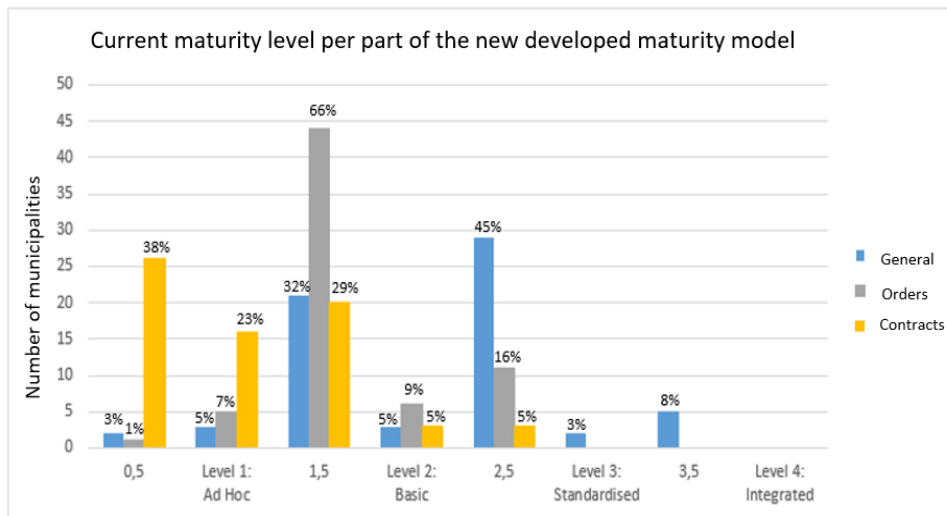
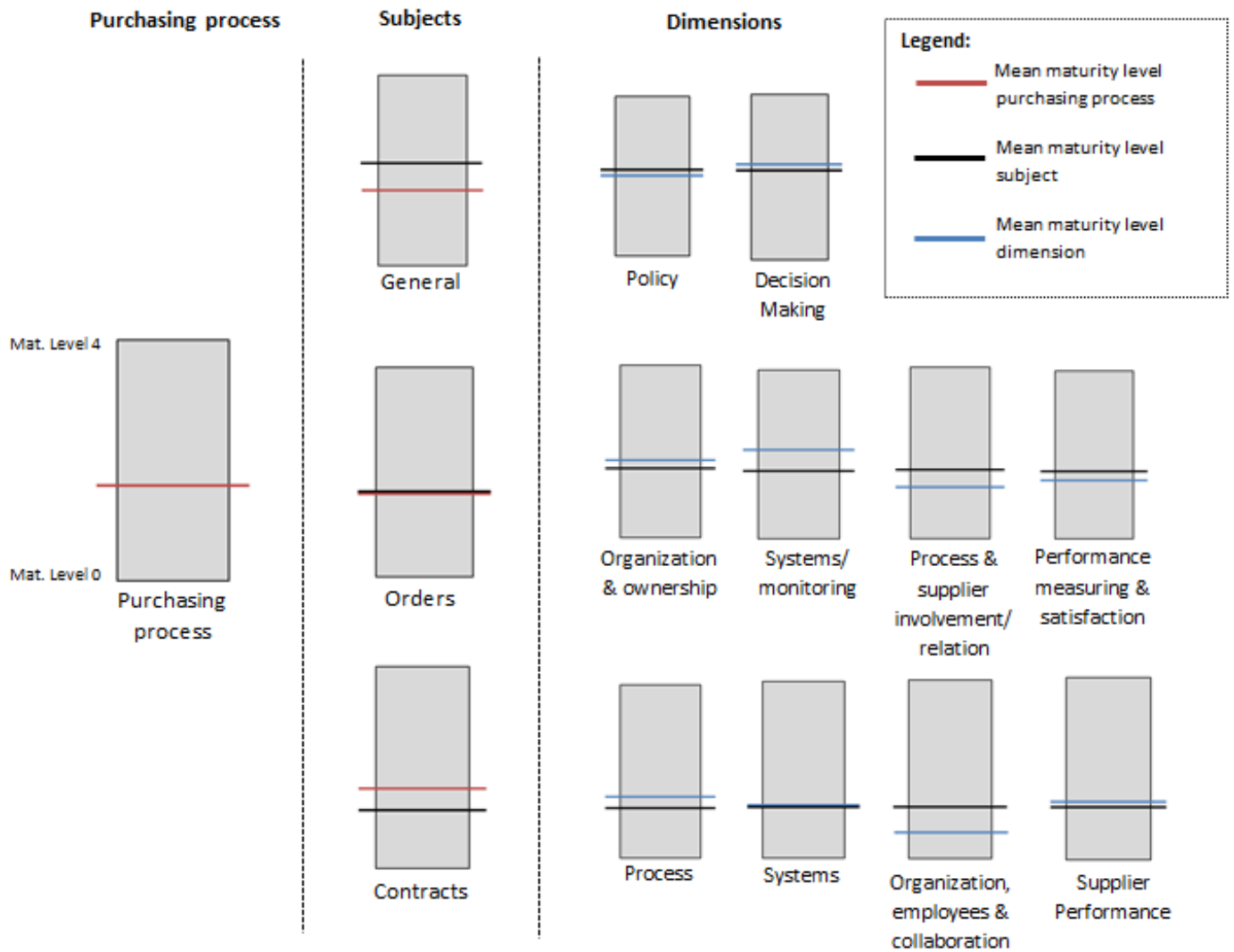


Figure 16 presents the mean maturity level from three perspectives. As mentioned previously, the “general” subject in the new maturity model has the highest mean maturity level. Looking at the dimensions under “general”, we see that there is a small difference in mean maturity between the dimensions “decision making” and “policy”, with decision making having a higher level of maturity. There is a greater difference in mean maturity between the dimensions under the subject “orders”. We see that the dimension “systems and monitoring” has the highest mean maturity level among the four “orders” dimensions. The dimension “organization and ownership” also scores above the average for the subject “orders”. The dimensions “process and supplier involvement/relation” and “performance measuring and satisfaction” score below the average maturity of the subject “orders”, with “process and supplier involvement/relation” having the lowest mean maturity level. Finally, looking at the dimensions of the subject “contracts”, we see that the dimension “organization, employees and collaboration” has the lowest mean maturity score. The dimension “process” has a higher maturity score than the mean maturity level of the subject “contracts”. Furthermore, we see that the maturity levels of the dimensions “systems” and “supplier performance” are close to the mean maturity level of the subject “contracts”.

Figure 16. Mean of the current maturity level by subject and dimension



4.2 Desired level of maturity

Figure 17 gives an overview of the current level of maturity, the desired level of maturity within 3 years and the desired level of maturity in the future. Most municipalities desire to increase the maturity level of their purchasing process to an average level of 2.5 within 3 years. Currently, most municipalities have a maturity level of 1.5. To achieve their desired maturity level in 3 years, municipalities must improve their purchasing process on average by 1 maturity level. We also see that after this optimization within 3 years, municipalities have the ambition to further optimize their process to an average level of 3.5. To achieve this desired future maturity level, municipalities need to improve their purchasing process on average by 2 maturity levels.

Figure 17. Desired level of maturity

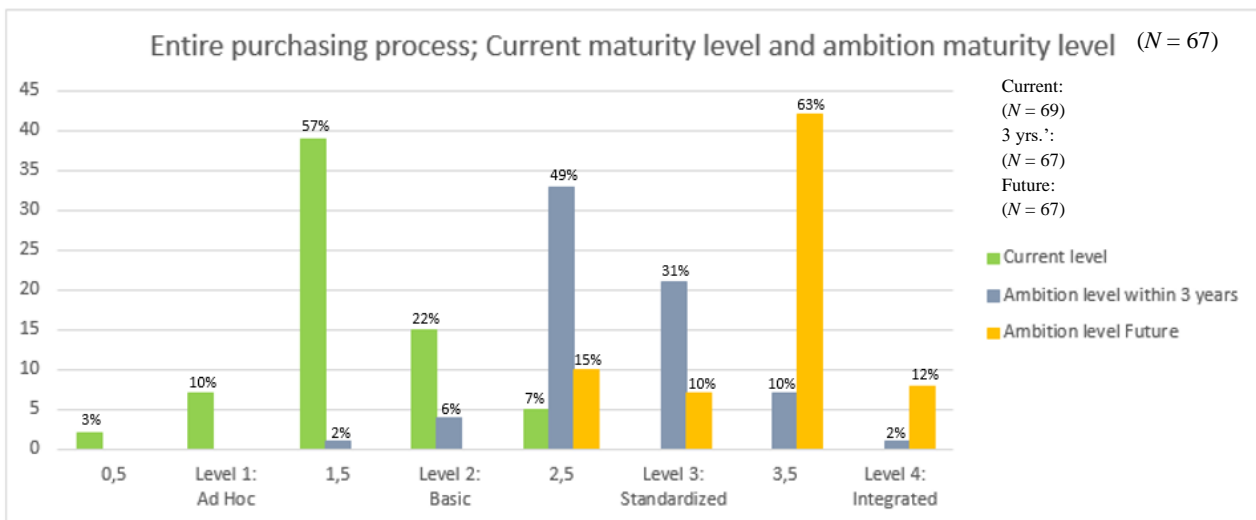
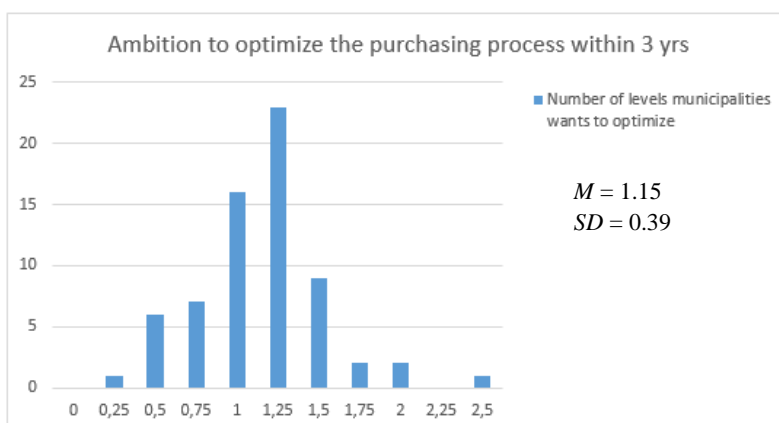


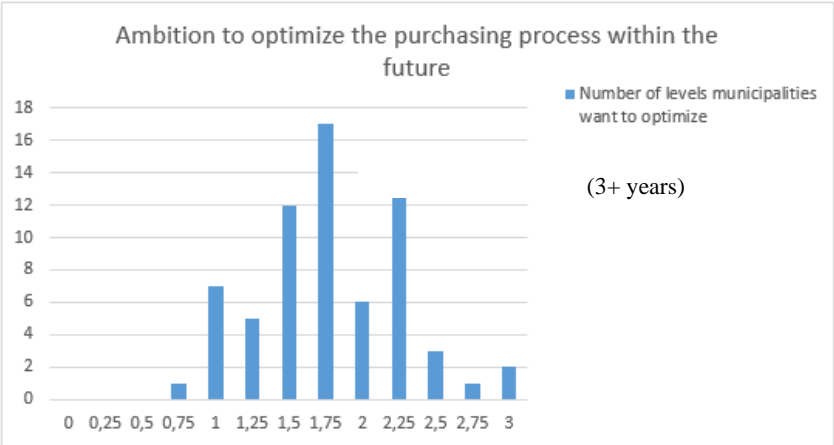
Figure 18 presents a closer look at the individual cases and their ambition within 3 years. All municipalities want to improve their purchasing process. However, there are 14 municipalities that do not have a goal of optimizing their purchasing process by at least a full level over the next 3 years. By contrast, 48 municipalities do want to improve their purchasing process maturity level by from 1 to 1.5 levels over the next 3 years. Additionally, 5 municipalities have the relatively high ambition of improving their purchasing process maturity by more than 1.5 levels.

Figure 18. 3-goal by municipality.



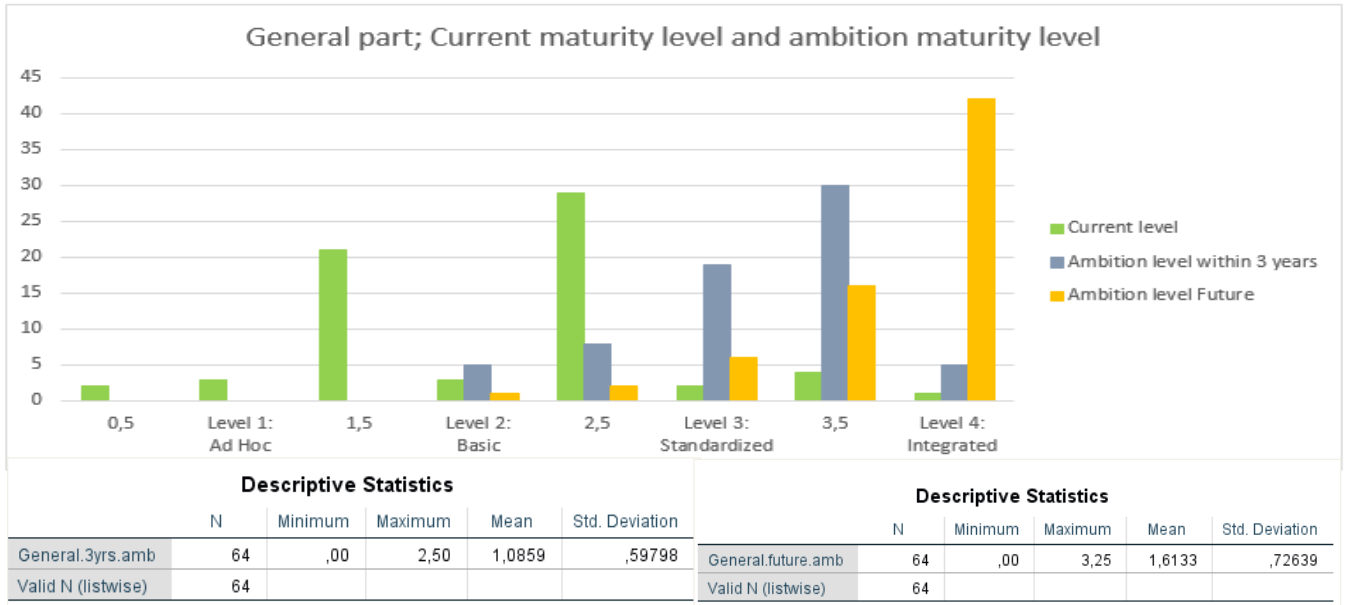
Looking at municipalities’ ambitions to improve their purchasing process in the future (beyond 3 years), only one municipality does not want to improve its purchasing process by a full maturity level. There are 41 municipalities that hope to improve their process by 1 to 2 levels, and there are 25 that hope to improve by 2 to 3 levels. Comparing descriptive statistics for 3-year ambitions to those for longer-term ambitions, we see that on average most municipalities have greater ambitions for process improvement within the next 3 years.

Figure 19. Future ambition by municipality



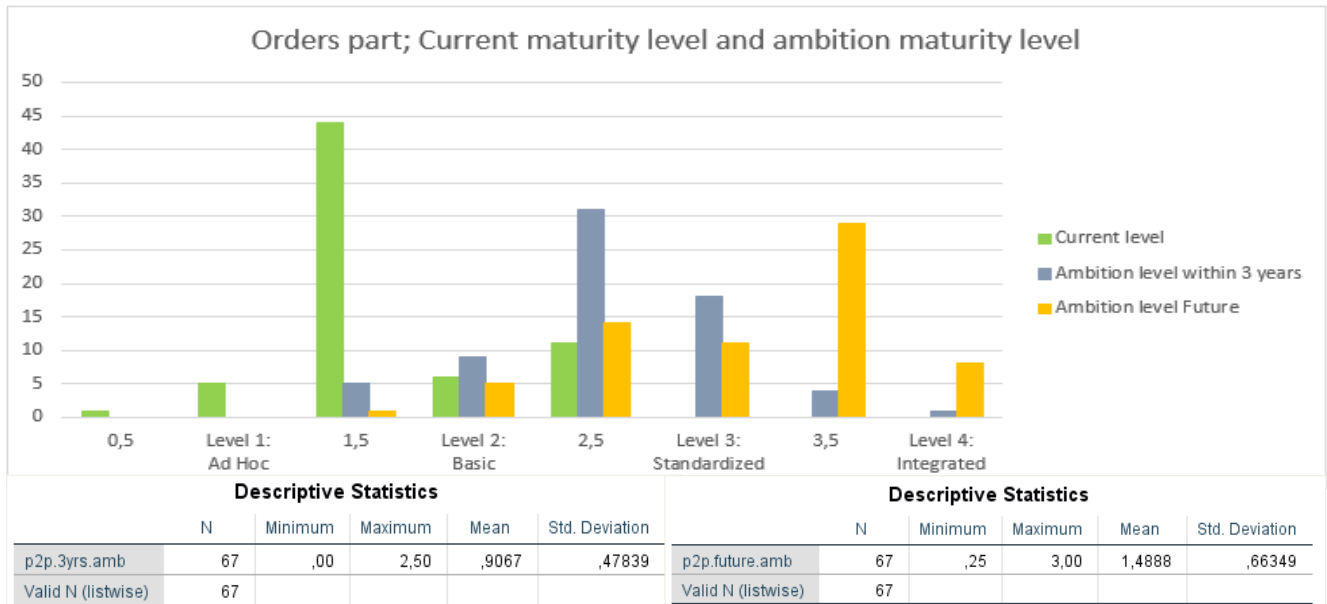
Looking at the differences in ambition across the three subjects of the maturity model, as visualized in figure 20, we see that municipalities prefer to focus on the “contract” subject of the maturity model when optimizing. However, we cannot assume from this that municipalities believe that contract management is the most important aspect of the purchasing process. As mentioned above, municipalities’ current maturity level for “contracts” is the lowest level among the three model subjects. This indicates that contract management may be a point of attention, which could be a reason for the preference for contracts as a focus for improvement. Furthermore, we see that improving the maturity level of the subject “orders” has the lowest priority among the three model subjects.

Figure 20. Current and desired maturity level of municipalities



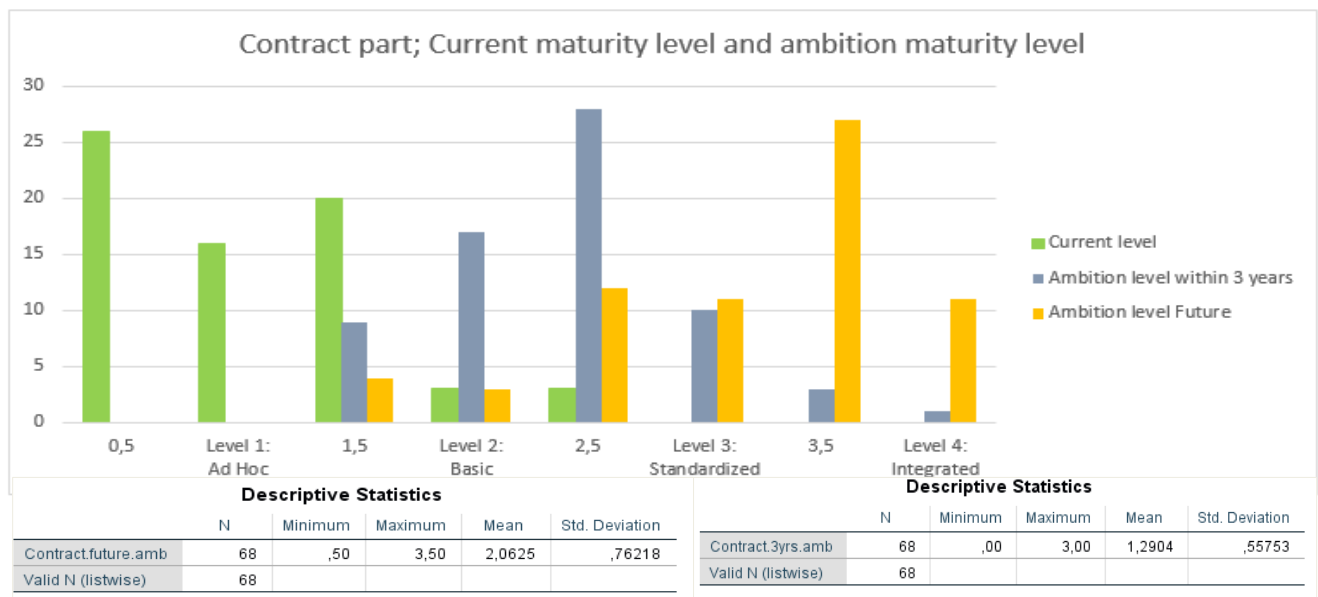
1A. Descriptive statistics, general part, ambition within 3 yrs.

1B. Descriptive statistics, general part, ambition future.



2A. Descriptive statistics, orders part, ambition within 3 yrs.

2B. Descriptive statistics, orders part, ambition future.



3A. Descriptive statistics, contract part, ambition within 3 yrs.

3B. Descriptive statistics, contract part, ambition future.

4.3 Influencing factors

It is assumed that the factors available time and budget, available knowledge, organization size and organization culture could have an influence on the current level of maturity of the purchasing process. To check whether there is a difference in median maturity these factors are analysed.

Figure 21 presents the sizes of the participating municipalities. Of the participating municipalities, 51% are considered small. When considering the possible effect of size, it is notable that in figure 22 medium-sized municipalities have a lower median maturity level than large or small municipalities. We expected to see a non-linear, U-shaped relationship between firm size and process maturity.

Figure 23 represents the numbers of participating municipalities by dominant organizational culture. The figure indicates that 48% have a clan culture. When comparing the dominant organizational cultures with the median maturity level in figure 24, we see that municipalities with an ad hoc culture have the highest median maturity level in comparison to the other organizational cultures.

Figure 21. Size of participating municipalities size

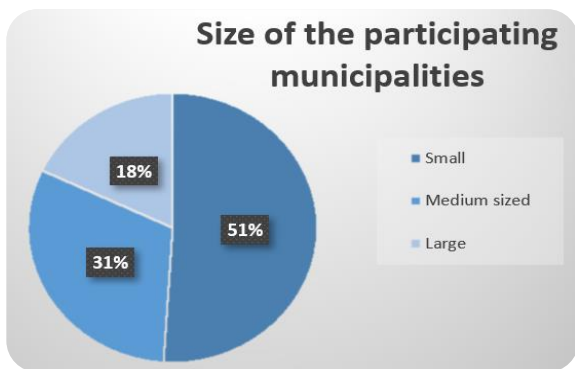


Figure 22. Median maturity level by

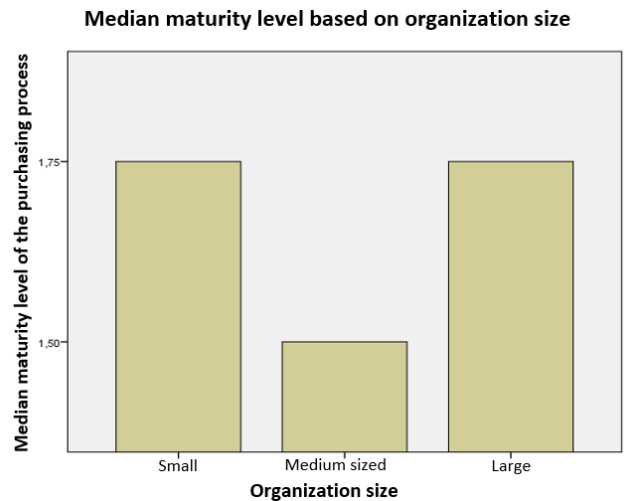


Figure 23. Dominant organizational culture

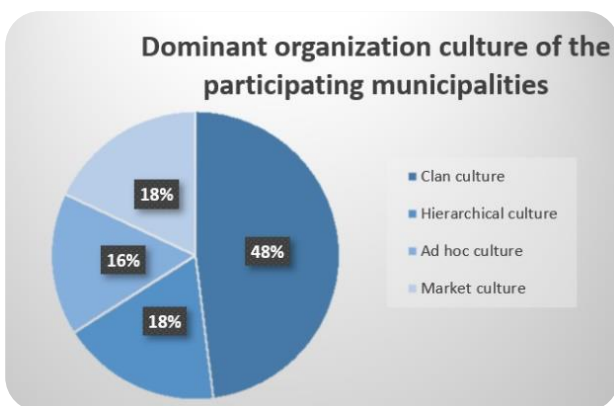
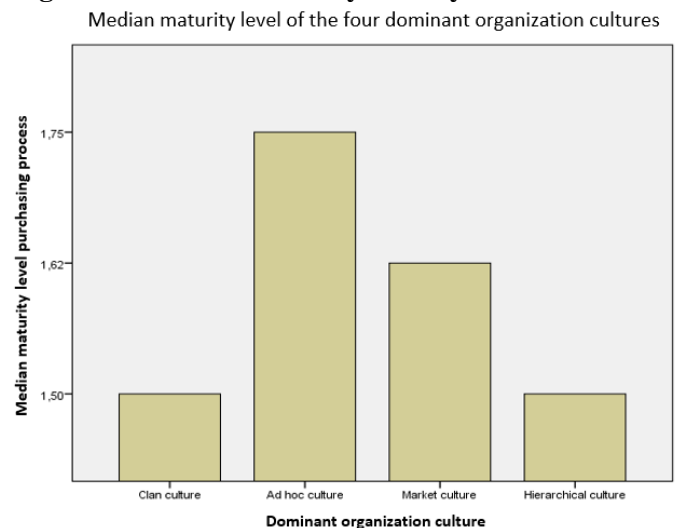


Figure 24. Median maturity level by culture



*Median of market culture lies between the maturity of 1.50 and 1.75

In addition the median maturity level of municipalities with a market culture is higher than that of municipalities with a clan or hierarchical culture. Furthermore, we see that municipalities with a hierarchical culture or clan culture have a lower level of maturity than municipalities with either of the other two cultures.

Looking at figure 25 we see that 52% of the participating municipalities state that there is not enough budget and time available to optimize the purchasing process. Looking at figure 26 we see that among municipalities that strongly agreed that there is enough budget and time available to optimize the purchasing process, the median maturity level is 2.25. The median maturity level decreases as we move from “agree to a certain extent” to “strongly disagree”. It is notable that the median maturity level is relatively low for municipalities that simply “agree” that there is enough budget and time available to optimize the process.

Figure 25. Availability of budget and time

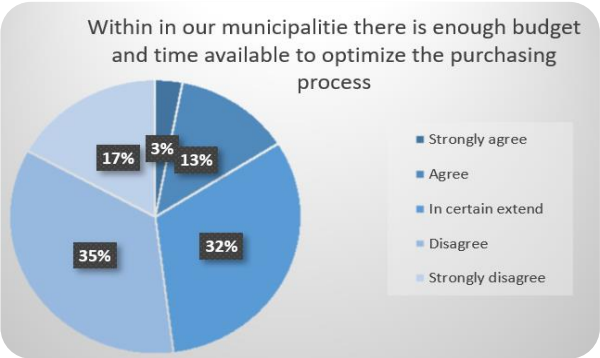


Figure 26. Maturity based on available budget and time

Median maturity level based on available budget and time

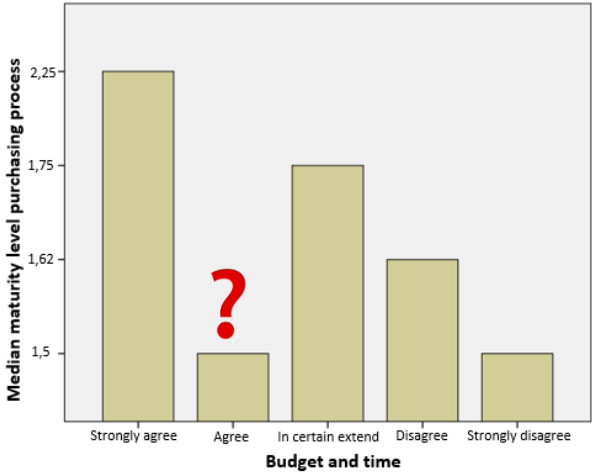


Figure 27 presents numbers on available knowledge, showing 44% of participating municipalities agreed they have enough knowledge available to optimize the purchasing process. Looking at the influence of available knowledge on the current level of maturity, visualized in figure 28, we see that municipalities that “agree” with the fact that there is enough knowledge available have a higher level of maturity than those municipalities that reported that there is not enough knowledge available. However, it is notable that in municipalities that strongly agree they have enough knowledge the median level of maturity is lower than in municipalities that agree, agree to a certain extent, or even disagree.

Figure 27. Availability of knowledge

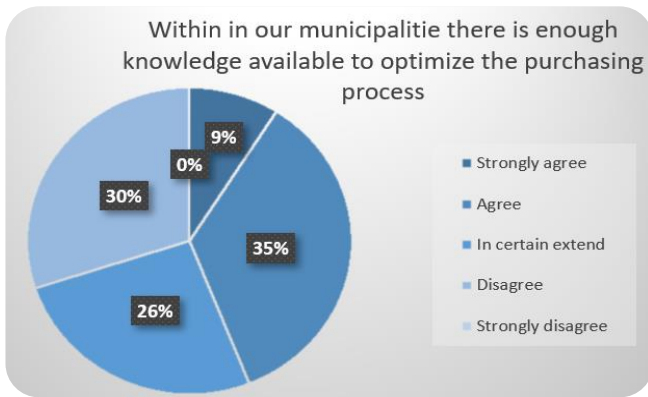
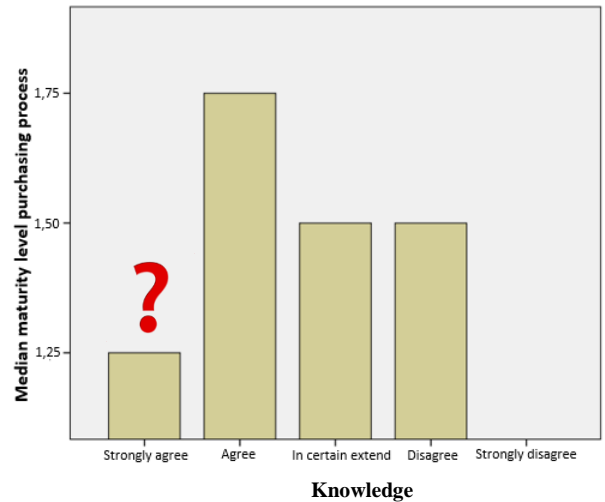


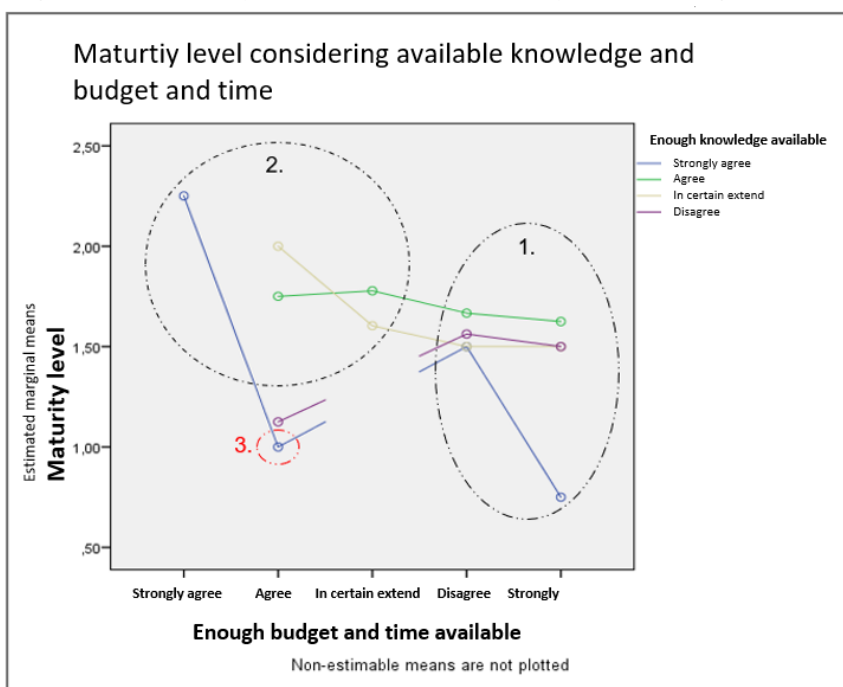
Figure 28. Maturity based on available knowledge

Median maturity level based on available knowledge



Looking at the effects of the factors available budget and time, available knowledge and organization culture on the level of maturity reveals some remarkable findings. To explain some of these findings, additional analyses were conducted. First, looking at results in figure 26, we did not expect that municipalities that “agree” they have enough budget and time to optimize the process would have a lower maturity level than municipalities that indicated they do not have enough budget and time. Similarly, looking at figure 28, we did not expect that municipalities that “strongly agree” they have enough knowledge to optimize the purchasing process would have a lower median maturity level than municipalities that do not agree. To explain these findings, an additional analysis was performed to identify possible moderating effects between these factors. Figure 29 shows the difference in maturity level based on available budget and time versus available knowledge. First, looking at area 1 within the graph, we see that municipalities that disagree or strongly disagree that they have enough knowledge or that they have enough budget and time have an average maturity level of 1.5.

Figure 29. Maturity level and the availability of knowledge and budget and time



Second, looking at area 2 we see that municipalities that indicated they have enough knowledge available and enough budget and time have on average a higher level of maturity than those municipalities that disagree with statements that they have enough of at least one of these resources available. However, it is notable in looking at area 3 that municipalities that agree they have enough budget and time and strongly agree they have enough knowledge available have a relatively low median maturity level. A closer look at the data reveals that these municipalities are medium-sized and have a dominant clan culture. It is assumed that a dominant clan culture and a medium size have negative effects on maturity level. This could explain the relative low maturity level of these municipalities.

To get a better understanding of the possible influences of these factors, we have used the fsQCA method. This measurement gives insights into the proportion of memberships in the outcome associated with each logical configuration. Every configuration makes a unique contribution to the maturity level of municipalities. In table 6 the graphical exhibited is shown. Each black dot represents a necessary condition for a value-oriented activity. A blank space represents a do not care situation.

Table 6. Associations of value-oriented activities to outcomes of concern

Conditions	Configurations		
	C1	C2	C3
Culture	•		•
Budget & time	•	•	
Knowledge	•	•	•
Size	•	•	•
Raw coverage	0.162	0.323	0.331
Unique coverage	0.162	0.161	0.169
Consistency	0.903	0.84	0.68
Solution coverage	0.162	0.493	
Solution consistency	0.903	0.712	

Consistency “measures the degree to which membership in each solution term is a subset of the outcome” p. 86.

Raw coverage “measures the proportion of memberships in the outcome explained by each term of the solution” p. 86.

Unique coverage “measures the proportion of memberships in the outcome explained solely by each individual solution term” p. 86.

When all the factors are present, the consistency score is 0.903. This means that 90% of the outcome is determined by the presence of the factors. We assume that there is a moderating effect between the influence factors and the maturity level of municipalities. However, additional research is necessary to determine whether this moderating effect exists and, if so, what the strength of this effect is.

In appendix 9 the conducted statistical analyses are presented. The results, however, were inconclusive because *N* was too small. Therefore, these analyses of whether these factors have an effect on the current maturity level are not included here. Additional data is required to

determine whether there is a moderating effect and to assess the strength of the relationships between the factors and the maturity level.

Finally, to assess whether all significant influencing factors were included in this research, this open query was given to respondents: “Are there any challenges to optimizing the purchasing process? If yes, what are these challenges?” The results are presented in appendix 7.

5. Discussion

In this section, the key findings of this study are described and the research question – “What are the current and desired maturity levels of the purchasing process of municipalities in the Netherlands, and which factors may have an effect on the maturity level?” – is answered. First, the current maturity level and the desired maturity level of the purchasing process of municipalities in the Netherlands are described. Subsequently, the influence of the factors available budget and time, available knowledge, size of the organization and organizational culture are described. Second, practical recommendations are presented, and the added practical and theoretical value of this research is described. Finally, this study’s limitations and opportunities for future research are discussed.

5.1 Current and desired maturity level

Research has shown that many municipalities within the Netherlands have not developed contract management (Schippersheijn et al., 2013). Based on these results, it can be concluded that the maturity level of the contract management process of these municipalities is still relatively low. Similarly, the P2P processes of these municipalities also have a relatively low maturity level. This means there are many opportunities for municipalities to improve their purchasing process to gain benefits accordingly. On the other hand, municipalities often have a well-written policy and a higher maturity level when making a well-considered decision as to the in-sourcing or out-sourcing of a contract or when deciding between a contract and an order or selecting a supplier. External auditors issue efficiency and equity reports annually on the accounts of municipalities in the Netherlands (Rijksoverheid, 2020). From this, the conclusion can be reached that municipalities have optimized the general part of the purchasing process, consisting of a well-written policy, and make well-considered decisions to justify the purchase procedure. Looking at the “orders” dimensions, it can be concluded that the main points of attention when optimizing the P2P process are the sub-dimensions “process and supplier involvement/relation” and “performance measuring and satisfaction”. In addition, the main point of attention among the dimensions under “contracts” is improving the “organization, employees and collaboration”.

5.2 Desired maturity level

Municipalities have the desire to improve their purchasing process by 1 maturity level within 3 years. Most municipalities have also stated their ambition to further improve the purchasing process after the 3-year mark by an average of 1 additional maturity level. The focus here is mostly on the contract management subject within the maturity model. However, the

difference in focus strength between the “general”, “order” and “contract management” subjects is small. It can be concluded that there is certainly ambition to optimize the purchasing process over the coming years. However, not all municipalities feel the need to reach the highest level of the maturity model. We expected that municipalities would be most interested in improving their contract management process over the coming years, because contract management has been the focus of attention over recent years. To a certain extent this expectation is correct. On the other hand, the results show us that the P2P process is receiving increasing attention, and the goals for the P2P process are higher than expected. In addition, we expected that the “general” subject would have the highest current maturity level and would therefore be a lower priority in terms of future goals. It turns out that this difference is smaller than expected and that municipalities have a strong desire to improve the general part of the purchasing process.

5.3 Effects of influencing variables on the current level of maturity

We expected that for organizations that have limited budget and time available, the median level of maturity would be lower than that of organizations that have sufficient budget and time. Of the participating municipalities, 52% stated they did not have enough budget and time available to optimize their purchasing process. Only 16% of municipalities agreed with the statement that they have enough budget and time available. First, it can be concluded that most municipalities indicate there is not enough budget and time available to optimize the purchasing process. Municipalities that disagreed or fully disagreed with the statement that they had enough budget and time available had a lower median level of maturity compared to municipalities who fully agreed or agreed to a certain extent with that statement. It is notable that municipalities that selected “agree” for that statement had a relatively low median of level of maturity. In brief, time and budget do not seem to automatically lead to a higher maturity level, although a lack of budget and time does limit the maturity level. This fits with the findings of Hayes (2018), who observed that to optimize a process, enough budget and time must be available.

We also expected that municipalities with enough knowledge to optimize the purchasing process would have a higher median maturity level than municipalities that do not have enough knowledge available. We found that municipalities that agreed with the statement that they had enough knowledge had a higher median level of maturity than municipalities that agreed to a certain extent or disagreed with that statement. It seems that available knowledge contributes to a higher level of maturity. However, it is notable that municipalities that fully agreed with the statement that they had enough knowledge had a lower mean maturity level. Additional research is necessary to identify a possible moderating effect between the influencing factors and the maturity level.

Contrary to the expectation that municipalities generally have a hierarchical organizational culture based on findings from Bremer, Lamers, and Brum (2010), our results show that 48% of participating municipalities had a clan culture. Municipalities with a clan culture or hierarchical culture had a lower median maturity level than municipalities with ad hoc or market cultures. Municipalities with ad hoc cultures had the highest median maturity level. It seems that an adhocracy culture is conducive to optimizing the purchasing process. In addition, clan culture and hierarchical culture have a negative effect on optimizing the purchasing process.

In considering the possible effect of size, we found that medium-sized municipalities had a lower median maturity level than did small or large municipalities. We expected a non-linear, U-shaped relationship between firm size and process optimization. These findings are consistent with what we found in the literature. Smaller organizations are more flexible, have shorter lines of communication and make decisions more quickly (Amah, et al., 2013). On the other hand, Cavusgil, Calantone, and Zhao (2003) found that large organizations more often have more resources, including knowledge than medium sized and smaller organizations.

In short, it can be concluded that all the factors reviewed have an effect on the median maturity level. However, additional research is necessary to determine the strength of the relationship between the factors and the maturity level and the possibility of a moderating effect of the influencing factors on the maturity level.

5.4 Practical recommendations

To justify the tendering procedure and to gain optimal benefits from a well-designed purchasing process, it is important that municipalities continuously improve the design of this process, particularly because the P2P processes and contract management processes of municipalities are at a low level of maturity. First, speaking of the P2P process, it turns out that municipalities have not developed the sub-dimension “process and supplier involvement/relation”. Therefore, it is recommended that municipalities first make clear to their employees where a service or a product must be purchased and that they establish clear agreements about the delivery of products and services. Additionally, municipalities have not developed the sub-dimension “performance measuring and satisfaction”. Therefore, it is also recommended that municipalities evaluate their purchase orders. This will give municipalities insight into the delivery performance of suppliers and the quality of the purchased products and services. In addition, municipalities have also not developed their contract management process. It turns out that municipalities have not fulfilled the responsibilities of contract management centrally. Additionally, municipalities lack sufficient qualitative capacity. Therefore it is recommended that municipalities take on the responsibility of contract management centrally and increase their qualitative capacity.

5.5 The practical value

First, our new model has practical value. The aim of the new model is to provide municipalities insight into their purchasing process. By means of the model, a municipality can measure the maturity of its purchasing process, revealing the process’s strengths and weaknesses. Based on this maturity measurement, optimization processes can be defined to further professionalize the purchasing process. Comparing the current situation with the desired situation will reveal the gap. Municipalities who participated in this research received a report which included their individual maturity measurement, a comparison of their individual maturity measurement with the mean maturity level of the entire group of participating municipalities and the measures of the influence of the factors budget and time, knowledge, organization size and organization culture on maturity level.

Second, this research gives municipalities and interested parties knowledge about factors influencing the optimization of the purchasing process. Municipalities are able to create a positive environment with the resources needed to positively affect the optimization process.

Understanding the pitfalls of optimizing the purchasing process helps municipalities to create awareness and insights on how to deal with these pitfalls.

5.6 Limitations and opportunities for future research

A limitation of this research is the size of the response. The first data collection was conducted during and just after the holiday season. This resulted in a higher rejection rate. Nevertheless, a great deal of effort went into collecting respondents. Various parties participated in this effort to ensure the highest possible response number for this study. Many communication channels were used to approach the right person within each municipality with the request to participate. The communication channels used were phone, letters, email, LinkedIn and even articles and online pop-ups on relevant websites. Based on the formula of Yamane, 78 responses were needed to have a representative sample size with a confidence interval of 90%. Taking into account the difficulty of approaching this target group, municipalities, it can be said that this research still included a relatively large number of respondents compared with other studies.

Furthermore, this research identified several factors which influence the maturity level of the purchasing process. It is assumed that the factors size, organizational culture, available knowledge and available budget and time have a moderating effect on the maturity level of the purchasing process. Further research is needed to determine the strength of the relationships between these factors and the maturity level. Additional research is also needed to confirm or reject the assumption that there is a moderating effect between the factors and the maturity level.

Last but not least, this research provided insights into the current and desired maturity levels of the municipalities. After 3 years, this research can be repeated to learn whether the target level has been achieved and to gain insights into the level of optimization during those years.

6. Acknowledgement

First, I would like to thank Frederik Vos for his support writing this thesis, starting with defining the topic, selecting a research method and determining the methodology for processing the data. Additionally, I would like to thank my second supervisor, Vincent Delke, for his support and feedback. Secondly, I would like to thank the following parties: Vereniging van Nederlandse Gemeenten, Gemeentelijk Inkoop Platform, E-proQure, Gemeente.nu and Coppa for their help in gathering respondents. I would also like to thank the purchasing experts of Coppa, Jettie Bijlsma, Kim Moekotte and Willem Hoek, for sharing their knowledge and their feedback. Last but not least, I would like to thank Norbert and Karin Snijders for their feedback and for checking my English writing. I also want to thank my friends and fellow students who kept me motivated and who kept supporting me while I wrote my thesis, especially Celeste Rakers, who helped me process the data, and Joris van Gend for sharing his views and advice. They all contributed with their work toward the completion of my thesis.

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Appendix 1, overview of used articles

Article found with keywords:	Author(s) & year of publication	Subject	Research method	Location of study
procure to pay	Versendaal, van den Akker, Xing & de Bevere (2013)	Provide an overview of procurement maturity models that include IT-alignment.	In-depth study	The Netherlands
procure to pay	Dachyar & Praharani (2015)	Improvement of the shipping company procurement process	Business process re-engineering method that involves four experts	Indonesia
procure to pay	Cuylen, Kosch & Breitner (2016)	Maturity model for electronic invoice processes	Combination of qualitative-empirical and conceptual approaches	Germany
procure to pay	Pongsuwan (2016)	“Procurement Competitive Capability Maturity” to assess current practices of procurement function and perceives the level of its capabilities	Survey Sample: 52 procurement organizations in Southeast Asia	Bangkok, Thailand
procure to pay	Dumas, La Rosa, Mendling & Reyers (2018)	A textbook about the fundamentals of Business Process Management	Textbook	Estonia, Australia, Austria & The Netherlands
Contract management	Knoetser (2013)	Contract management in practice	Textbook	The Netherlands

Contract management	Bos (2014)	Guide for operational management and contract management	Case studies and a literature study	The Netherlands
Contract management	Overgaauw (2015)	Analysing the purchasing process, operational management, supplier management and performance management	Interview, observations, survey and a deskresearch	The Netherlands
Contract management maturity	Hirschheim, Heinzl & Dibbern (2009)	Outsourcing in a Global Economy: Traditional Information Technology Outsourcing, Offshore Outsourcing, and Business Process Outsourcing	E-book	Germany
Contract management maturity	Van der Valk & Roozemeijer (2009)	Towards a structured service purchasing process	Literature research and a questionnaire among Dutch purchasing managers	The Netherlands
Contract management maturity	Bakar, Peszynski, Azizan, Pandivan and Sundram (2016)	Abridgment of Traditional Procurement and E-Procurement: Definitions, Tools and Benefits.	Literature study	Malaysia

Contract management maturity	Chi & Chau (2012)	Relationship, contract and IT outsourcing success	two descriptive case studies	Hong Kong
Contract management maturity	Van Poucke, Van Weele & Matthijssens (2014)	The interrelationship between purchasing maturity, internal customer satisfaction and purchasing performance	Empirical study	The Netherlands
Nevi p2p	Pouw & Tatan (2015)	Critical success factors for P2P implementation	Written by experts NEVI	The Netherlands
Found as a reference within one of the relevant articles	Lutteroth, Luxton-Reilly, Dobbie & Hamer (2007)	Development maturity model		Australia
Textbook	Hayes (2018)	The Theory and Practice of Change Management	Textbook	UK
Textbook	Monczka, Handfield, Giunipero, & Patterson (2016)	Purchasing and supply chain management	Textbook	USA
Textbook	Schoenherr (2019)	Evolution of electronic procurement	Textbook	Germany
Textbook	Drion & Sprang (2012)	Chapter about the purchasing process	Textbook	The Netherlands
Found as a reference within one of the relevant articles	Romzek & Johnston (2002)	Theoretical model to explain variations in the effectiveness of the implementation and	Using data derived from an initial case of state contracting for	Kansas

		management of state contracts.	social services for the elderly	
Found as a reference within one of the relevant articles	Themistocleous, Irani and Love (2004)	Evaluating the integration of supply chain information systems	Case study	UK
Found as a reference within one of the relevant articles	Turner (2004)	Developing a contract strategy	Literature review	England
Found as a reference within one of the relevant articles	Brown & Potoski (2003)	Managing contract performance		
Found as a reference within one of the relevant articles	Kaner & Karni (2004)	A capability maturity model for knowledge-based decision making	Literature study	Israel
Found as a reference within one of the relevant articles	Chen, Paulraj & Iado (2004)	Examining the links among strategic purchasing, supply management, and firm performance	Extensive literature review and a survey among six experts	USA
Paper read during innovation class at Utwente	Okrent & Vokura (2004)	Process mapping in successful ERP implementations	Discussion of six core business processes	USA
Found as a reference within one of the relevant articles	Lutteroth, Luxton-Reilly, Dobbie & Hamer (2007)	Development of a maturity model according the CMM model	An analogy between process improvement in software development and	New Zealand

the relevant articles			process improvement	
Found as a reference within one of the relevant articles	De Bruin, Freeze, Kulkarni & Rosemann (2005)	The Main Phases of Developing a Maturity Assessment Model	Generalization of the phases of developing a maturity model in any domain	Australia
Maturity model development	Mettler, Rohner & Winter (2010)	Classification system for maturity models	Broad literature review that yields 117 maturity models which are analysed in detail	Germany
Maturity model development	Becker, Niehaves, Pöpelbuss & Simons (2010)	Reflecting and developing theoretically sound maturity models	Research paper	Germany
Effect of organization size	Amah, Daminabo-Weje and Dosunmu (2013)	Size and Organizational Effectiveness	Literature review	Nigeria
	Cavusgil, Calantone and Zhao (2003)	The effect of tactic knowledge transfer on firm innovation capability	Survey among a broad manufacturer and service firms within the US	US
	Rocchigiani, Kalas & Herbel (2013)	Organization analysis and development	Textbook	Italy & France
	Rauner (2015)	Process optimization of behavioural interventions	Case studies	The Netherlands
	Jindal and Shaik (2015)	Behavioural Training as Talent Management	Extensive literature	India

		Strategy in Organisations	review	
	Yazici (2009)	The role of project management maturity and organizational culture in perceived performance	Survey-based research	Florida
	Cameron & Quinn (2006)	Measuring the organizational culture (OCAI)	Literature research, survey-based research and statistical analysis.	The Netherlands
Textbook	Caluwe & Vermaak	Colour model about different ways of thinking within organizations	Textbook	The Netherlands

Appendix 2, content of the purchasing process

Looking at the model of van Bente (2018) presented in figure 1, The dimension “order “ of the purchasing process is missing. Looking at the literature, Okrent and Vokurka (2004) mention that enterprise resource planning (ERP system) exist out of six key business processes. The ERP system can be seen as a procurement system (Chang, Marakatsoris & Richards, 2006). Looking at these six key business processes, the p2p process is part of the purchasing process and an extension when looking at contract management. The other processes can be seen as a part of contract management or go beyond the purchasing process. When adding the dimension order, consisting out of the p2p process, the entire purchasing process of van weele (1988) is covered, see the red extension to figure 1.

Okrent and Vokurka (2004): “Procure to Pay includes functions associated with procurement of, and payment for, all materials required by the Order Fulfillment process” p.639.

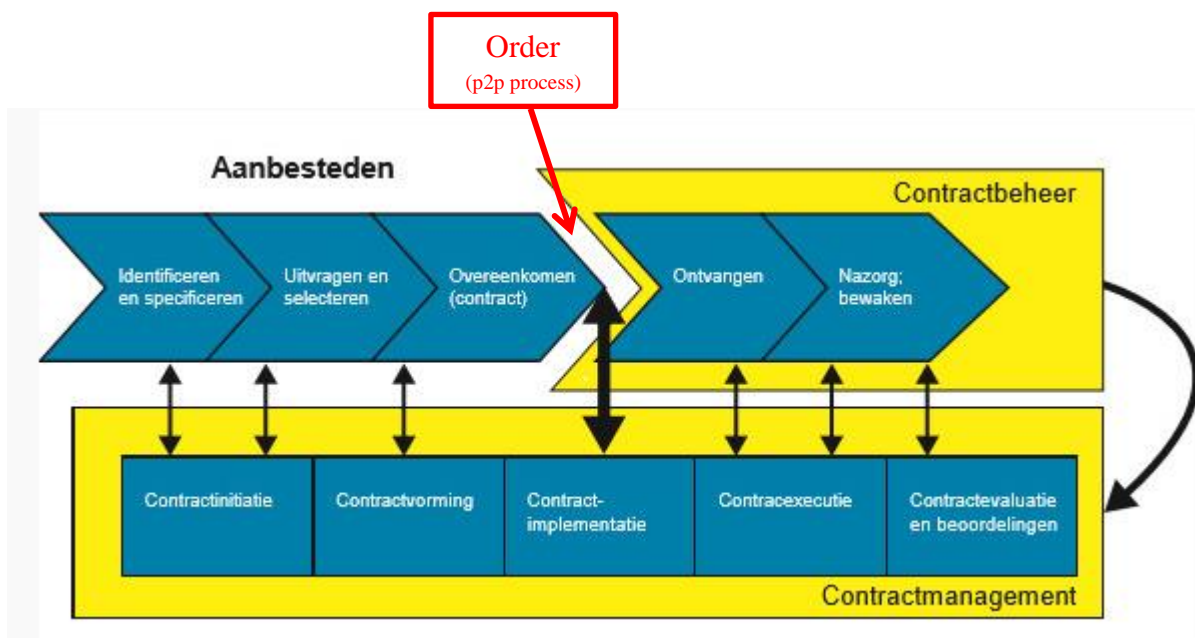
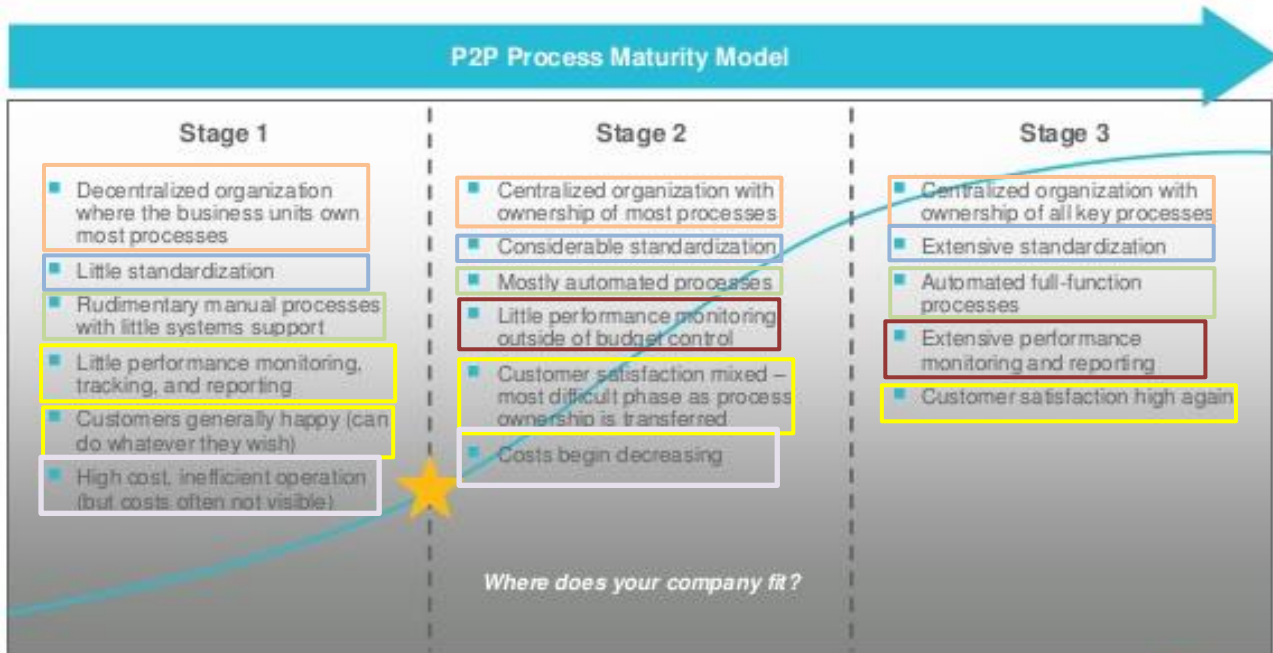


Figure 1, in control with contract management (Van Bente, 2018)

Appendix 3, defined subjects of the p2p maturity model

P2P Process Maturity Model

ScottMadden has a maturity model to differentiate the phases that companies pass through on their journey to a fully integrated P2P process. The model is divided into three stages, each representing a greater degree of performance effectiveness and efficiency.

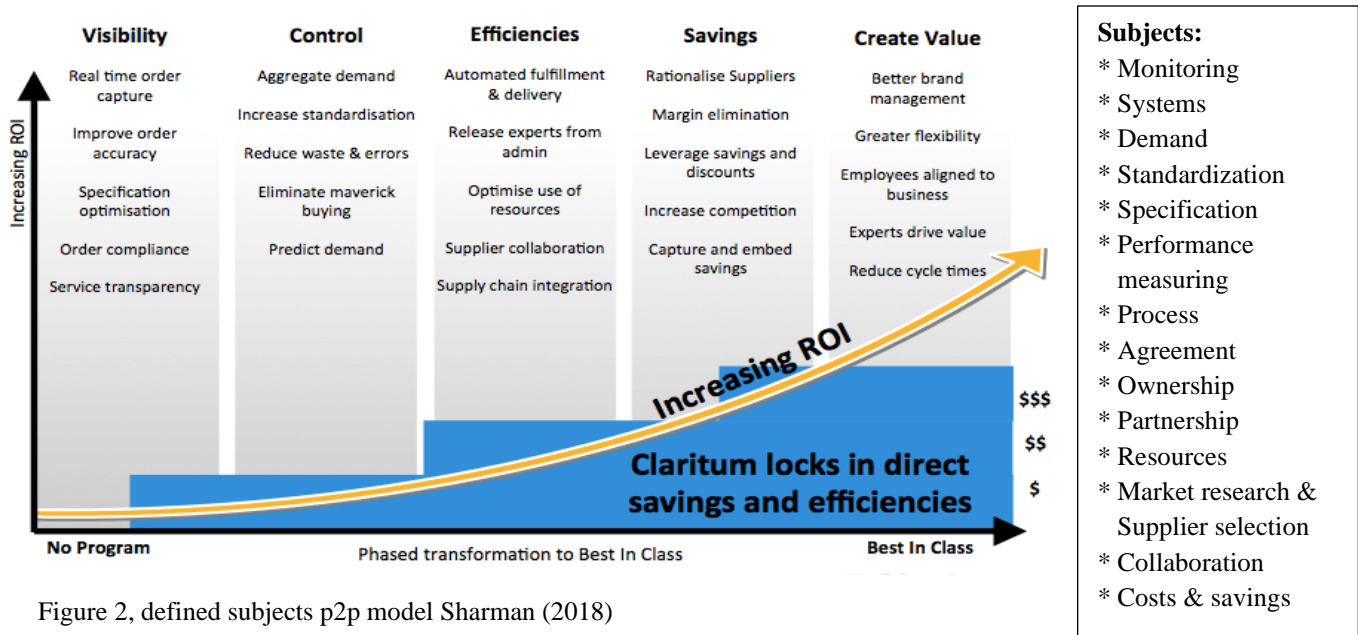


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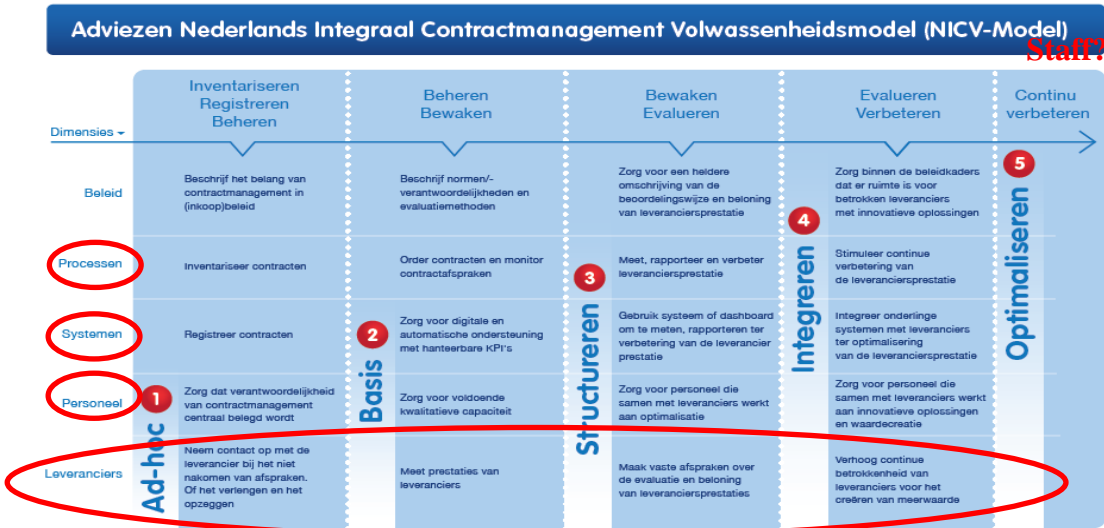
scottmadden
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Figure 1, defined subjects p2p model Scotmadden (2018)



Appendix 4, comparison of the CCM-model and NICV model



	Ad hoc	Basic	Standardized	Systematized	Optimized
	one-off	centralize; get control	streamline; simplify	inter-connect; modularize	plan, learn, adapt, embed
People Independent Informal Planned Oversight & Accountability	Lawyers and contract managers work autonomously	Informal contract teams	Individuals tasked with template development and maintenance	Stakeholder involvement; tactical planning	Management team oversight Formal strategic contract plan and optimization Establishment of center of excellence; focus on continuous improvement
Process Pre-signature --Request/Draft --Negotiate/Approve Post-signature --Managed/Audit --Optimized	No contract request process Contracts stored in multiple systems	Informal request process (eg email)	Online contract request	Automated template selection and routing; expedited contract review Contract obligations extracted and tracked	Automated selection of standard terms; limited exception handling Contracts performance metrics monitored

	Ad hoc	Basic	Standardized	Systematized	Optimized
	one-off	centralize; get control	streamline; simplify	inter-connect; modularize	plan, learn, adapt, embed
People Independent Informal Planned Oversight & Accountability	Lawyers and contract managers work autonomously	Informal contract teams	Individuals tasked with template development and maintenance	Stakeholder involvement; tactical planning Training and awareness	Management team oversight Formal strategic contract plan and optimization Establishment of center of excellence; focus on continuous improvement
Process Pre-signature --Request/Draft --Negotiate/Approve Post-signature --Managed/Audit --Optimized	No contract request process Contracts stored in multiple systems	Informal request process (eg email) Contracts collected into a single repository	Online contract request Contracts managed; standard contract profiles	Automated template selection and routing; expedited contract review Contract obligations extracted and tracked	Automated selection of standard terms; limited exception handling Contracts performance metrics monitored

Appendix 5, The survey

Welkom bij dit onderzoek

De universiteit Twente doet onderzoek naar de volwassenheid van de inkoopprocessen binnen gemeenten. De uitkomsten worden met de deelnemers aan de enquête gedeeld. Middels deze enquête willen we achterhalen wat het huidige niveau is van het ingerichte inkoopproces binnen gemeenten en welk niveau men in de toekomst wil bereiken. Daarnaast willen we gaan onderzoeken welke wensen gemeenten hebben met betrekking tot inkoopssystemen in de huidige situatie en welke specificaties gemeenten in de toekomst behoefte aan denken te hebben. Verder willen we gaan kijken welke invloeden er mee spelen bij het optimaliseren van het inkoopproces.

Om dit onderzoek mogelijk te maken hebben we uw hulp en kennis nodig. Gedurende de enquête proberen wij er achter te komen hoe de inkooporganisatie binnen de gemeente waarin u werkzaam bent is ingericht en waar de behoefte ligt voor in de toekomst.

De enquête kost in totaal ongeveer 20 minuten tijd. Er is een progressiebalk bovenaan de enquête weergegeven zodat u een schatting kunt maken hoelang de enquête nog duurt. Er zitten echter wel een aantal doorvragen in. Dit betekent dat deze balk bij de ene vraag sneller vooruit kan gaan dan bij een andere vraag. Probeer elk van de vragen zo goed mogelijk in te vullen. De uitkomsten worden zo verwerkt dat ze niet herleidbaar zijn naar u als persoon of gemeente. De resultaten zullen per provincie en/of in het algemeen verwerkt worden. Indien u wenst de enquête te beëindigen kunt u dit tabblad afsluiten. Wanneer u wenst kunt u op een ander moment de enquête verder afmaken.

Indien u meewerkt aan dit onderzoek zullen resultaten en belangrijke uitkomsten gedeeld worden met u. Hierbij kunt u denken aan:

1. Een volwassenheidsmodel met betrekking tot het p2p proces en contractmanagement gebaseerd op gemeenten
2. Overzicht waarin beschreven staat welke specificaties qua inkoopssystemen bij welk level van het inkoopproces passen.
3. Verder wordt er inzichtelijk gemaakt welke variabelen binnen gemeenten een invloed kunnen hebben op het optimaliseren van het proces.
4. Ten slotte krijgt u een vertrouwelijk overzicht toegestuurd waarin de volwassenheid en behoeftes binnen de gemeente waarin u werkzaam bent in relatie tot het gemiddelde van de gemeentes in Nederland beschreven staat.

Dit onderzoek werkt het beste op een laptop, computer of tablet.

Part 1: Algemene vragen over het inkoopproces

Het eerste deel van de enquête gaat over het beleid en eventuele beslissingen die genomen dienen te worden binnen de inkooporganisatie.

Q1 Binnen de gemeente is er een duidelijk beleid aanwezig waarin het gehele inkoopproces met bijbehorende belangen beschreven staan.

- Helemaal mee eens
- Mee eens —————→ Q2
- In zekere mate
- Oneens
- Helemaal mee oneens —————→ Q5

Q2 De informatiestromen staan duidelijk in het beleid beschreven.

(met informatiestromen wordt bedoeld de manier van communiceren en het terug vinden van benodigde informatie)

- Helemaal mee eens
- Mee eens —————→ Q3
- In zekere mate
- Oneens
- Helemaal mee oneens —————→ Q5

Q3 Richtlijnen, verantwoordelijkheden en evaluatiemethoden staan beschreven in het beleid.

- Helemaal mee eens
- Mee eens —————→ Q4
- In zekere mate
- Oneens
- Helemaal mee oneens —————→ Q5

Q4 Er is genoeg ruimte binnen de beleidskaders voor continue optimalisatie.

- Helemaal mee eens
- Mee eens
- In zekere mate
- Oneens
- Helemaal mee oneens

Q5 Hieronder staat een volwassenheidsmodel beschreven met betrekking tot het beleid van de inkooporganisatie.

	Ad hoc	Basic	Standardized	Integration
Beleids	Het inkoopproces en het belang ervan worden beschreven in het beleid	Naast de beschrijving van het inkoopproces en het belang ervan, staan ook de informatiestromen duidelijk beschreven in het beleid	Naast de beschrijving van het inkoopproces, het belang ervan en de informatiestromen staan ook de verantwoordelijkheden en evaluatiemethoden beschreven in het beleid	Naast de genoemde beleidsbeschrijvingen is er binnen de beleidskaders voldoende ruimte om te werken aan continue optimalisatie

Vul in:

- Welk van de weergegeven levels past op dit moment het best bij de inkooporganisatie waarin u werkzaam bent?

- Welk level wilt u binnen 3 jaar bereiken?

- Welk level wilt u in de toekomst bereiken? (>3 jaar)

	Level 1: Ad hoc	Level 2: Basic	Level 3: Standardised	Level 4: Integration
Welk level sluit op dit moment het beste aan bij de inkooporganisatie	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u binnen 3 jaar met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u in de toekomst met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Stel u voor:

Er treedt een nieuwe behoefte op binnen de gemeente waarin u werkzaam bent. Hiervoor moet er een nieuw product of service worden ingekocht. Voor de aanschaf zijn er een aantal beslissingen die overwogen kunnen worden.

De volgende vragen gaan over de volgende beslissingen:

- De beslissing tussen het in of uitbesteden van een dienst (met inbesteden wordt bedoeld het intern produceren van het product of het uitvoeren van de dienst door eigen organisatie)
- De beslissing tussen een contract of een losse aankoop
- De beslissing voor het maken van een leveranciersselectie

Q6 De verschillende opties zijn geanalyseerd op geschiktheid.

	Helemaal mee eens	mee eens	in zekere mate	oneens	Helemaal oneens
Voor de beslissing tussen het in/uit besteden van een product/dienst	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Voor de beslissing tussen een contract of een losse aankoop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Voor de beslissing van het maken van een leveranciersselectie	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q7 Voor het maken van de volgende beslissing is er een systematische benadering waarbij informatie is verzameld om vervolgens een beslissing te maken op basis van feiten

	Helemaal mee eens	mee eens	in zekere mate	oneens	Helemaal oneens
Voor de beslissing tussen het in/uit besteden van een product/dienst	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Voor de beslissing tussen een contract of een losse aankoop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Voor de beslissing van het maken van een leveranciersselectie	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

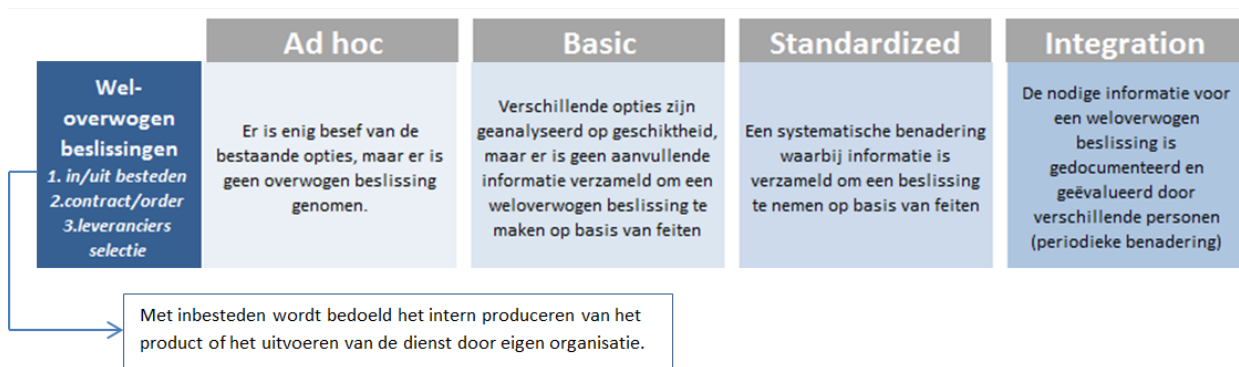
Q8 Voor het maken van de volgende beslissing is er een systematische benadering waarbij informatie is verzameld, gedocumenteerd en geëvalueerd door verschillende personen

	Helemaal mee eens	mee eens	in zekere mate	oneens	Helemaal oneens
Voor de beslissing tussen het in/uit besteden van een product/dienst	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Voor de beslissing tussen een contract of een losse aankoop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Voor de beslissing van het maken van een leveranciersselectie	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Om de betrouwbaarheid van dit onderzoek te vergoten worden de vragen nogmaals gesteld maar nu aan de hand van een volwassenheidsmodel voor het nemen van beslissingen.

Stel u wederom voor:

Er treedt een nieuwe behoefte op binnen de gemeente waarin u werkzaam bent. Hiervoor moet er een nieuw product of service worden ingekocht. Voor de aanschaf zijn er een aantal beslissingen die overwogen kunnen worden. Hieronder staan verschillende levels beschreven met betrekking tot het nemen van een weloverwogen beslissing.



Q9 Vul de volgende vragen in met betrekking tot het maken van een **beslissing over het in/uit besteden** van een product/dienst:

- Welk van de weergegeven levels past **op dit moment** het best bij de inkooporganisatie waarin u werkzaam bent?
- Welk level wilt u **binnen 3 jaar** bereiken?
- Welk level wilt u **in de toekomst** bereiken? (>3 jaar)

	Level 1: Ad hoc	Level 2: Basic	Level 3: Standardised	Level 4: Integration
Welk level sluit op dit moment het beste aan bij de inkooporganisatie	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u binnen 3 jaar met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u in de toekomst met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q10 Vul de volgende vragen in met betrekking tot het maken van een **beslissing tussen een contract of een losse aankoop**:

- Welk van de weergegeven levels past **op dit moment** het best bij de inkooporganisatie waarin u werkzaam bent?
- Welk level wilt u **binnen 3 jaar** bereiken?
- Welk level wilt u in de **toekomst** bereiken? (>3 jaar)

	Level 1: Ad hoc	Level 2: Basic	Level 3: Standardised	Level 4: Integration
Welk level sluit op dit moment het beste aan bij de inkooporganisatie	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u binnen 3 jaar met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u in de toekomst met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q11 Vul de volgende vragen in met betrekking tot het maken van een **beslissing over de leveranciersselectie**:

- Welk van de weergegeven levels past **op dit moment** het best bij de inkooporganisatie waarin u werkzaam bent?
- Welk level wilt u **binnen 3 jaar** bereiken?
- Welk level wilt u in de **toekomst** bereiken? (>3 jaar)

	Level 1: Ad hoc	Level 2: Basic	Level 3: Standardised	Level 4: Integration
Welk level sluit op dit moment het beste aan bij de inkooporganisatie	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u binnen 3 jaar met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u in de toekomst met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Part 2: Vragen met betrekking tot het inkopen van losse bestellingen (orders)

U bent op 1/4 van de enquête

De volgende vragen gaan over het inkopen van **losse aankopen**

Q12 Er is een duidelijk beleid waarin beschreven staat wie wat mag inkopen (ook wel procuratieregeling genoemd) en wanneer gecentraliseerde toestemming noodzakelijk is.

- Helemaal mee eens
- Mee eens —————→ Q13
- In zekere mate
- Oneens
- Helemaal mee oneens —————→ Q15

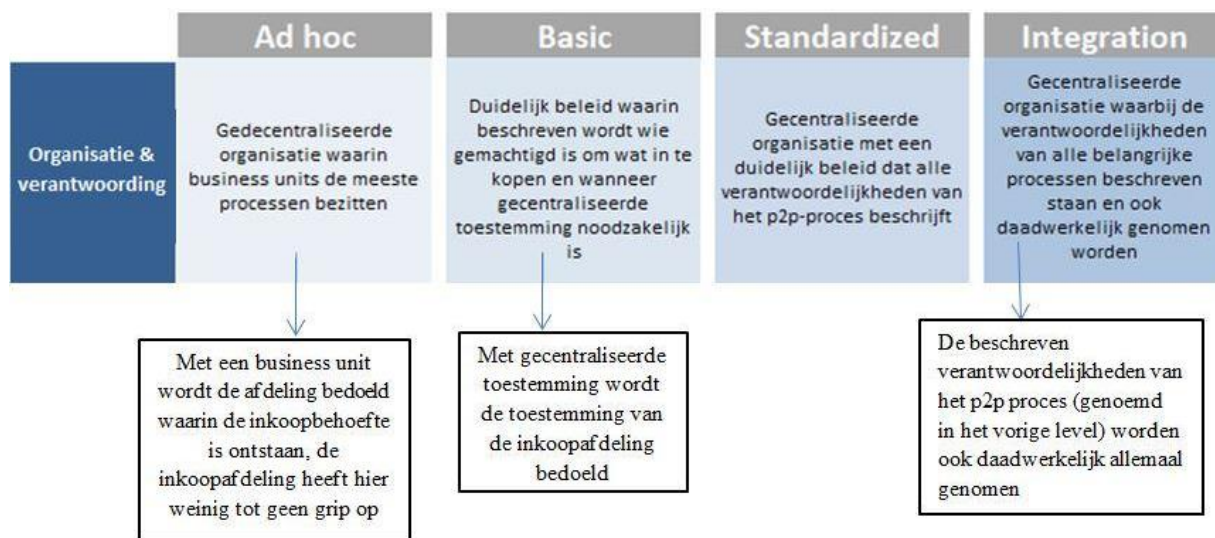
Q13 Er is een duidelijk beleid waarin de verantwoordelijkheden voor het inkopen van alle losse bestellingen centraal zijn belegd.

- Helemaal mee eens
- Mee eens —————→ Q14
- In zekere mate
- Oneens
- Helemaal mee oneens —————→ Q15

Q14 De procuratieregeling wordt geheel nageleefd en verantwoordelijkheden worden daadwerkelijk genomen.

- Helemaal mee eens
- Mee eens
- In zekere mate
- Oneens
- Helemaal mee oneens

Hieronder staat een volwassenheidsmodel beschreven met betrekking tot het p2p proces.



Q15 Vul in:

- Welk van de weergegeven levels past **op dit moment** het best bij de inkooporganisatie waarin u werkzaam bent?

- Welk level wilt u **binnen 3 jaar** bereiken?

- Welk level wilt u in de **toekomst** bereiken? (>3 jaar)

	Level 1: Ad hoc	Level 2: Basic	Level 3: Standardised	Level 4: Integration
Welk level sluit op dit moment het beste aan bij de inkooporganisatie	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u binnen 3 jaar met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u in de toekomst met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q20 De facturen worden allemaal in hetzelfde systeem geregistreerd.

- Helemaal mee eens
- Mee eens —————▶ Q21
- In zekere mate
- Oneens**
- Helemaal mee oneens** —————▶ Q23

Q21 Alle producten en diensten worden via hetzelfde systeem ingekocht en de facturen hiervan worden automatisch in het systeem opgeslagen.

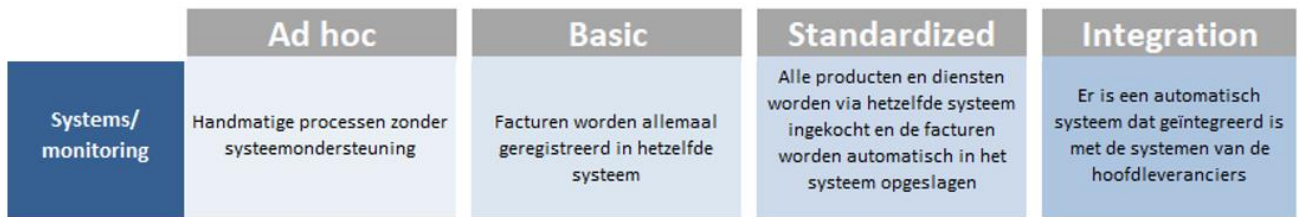
- Helemaal mee eens
- Mee eens —————▶ Q22
- In zekere mate
- Oneens**
- Helemaal mee oneens** —————▶ Q23

Q22 Het systeem is geïntegreerd met de systemen van de hoofdleveranciers.

- Helemaal mee eens
- Mee eens
- In zekere mate
- Oneens
- Helemaal mee oneens

Q 23 Welk systeem wordt er ter ondersteuning van dit proces gebruikt binnen uw inkooporganisatie?

Hieronder staat een volwassenheidsmodel beschreven met betrekking tot de systeem ondersteuning van het p2p proces.



Q24 Vul in:

- Welk van de weergegeven levels past **op dit moment** het best bij de inkooporganisatie waarin u werkzaam bent?

- Welk level wilt u **binnen 3 jaar** bereiken?

- Welk level wilt u in de **toekomst** bereiken? (>3 jaar)

	Level 1: Ad hoc	Level 2: Basic	Level 3: Standardised	Level 4: Integration
Welk level sluit op dit moment het beste aan bij de inkooporganisatie	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u binnen 3 jaar met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u in de toekomst met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q25 Medewerkers zijn grotendeels op de hoogte bij welke leverancier een product/dienst ingekocht moet worden.

- Helemaal mee eens
- Mee eens —————→ Q26
- In zekere mate
- Oneens**
- Helemaal mee oneens** —————→ Q29

Q26 Er zijn duidelijke afspraken met de leveranciers over de levertijden.

- Helemaal mee eens
- Mee eens —————→ Q27
- In zekere mate
- Oneens**
- Helemaal mee oneens** —————→ Q29

Q27 Leveranciers worden geïntegreerd (betrokken) in het bestelproces.

- Helemaal mee eens
- Mee eens —————→ Q28
- In zekere mate
- Oneens
- Helemaal mee oneens —————→ Q29

Q28 Leveranciers en medewerkers werken samen aan procesinnovatie en –ontwikkeling.

- Helemaal mee eens
- Mee eens
- In zekere mate
- Oneens
- Helemaal mee oneens

Hieronder staat een volwassenheidsmodel weergegeven op het gebied van leveranciersrelatie en betrokkenheid

	Ad hoc	Basic	Standardized	Integration
Proces & leveranciers betrokkenheid/ relatie	Er is geen gedwongen winkelnering	Het is duidelijk waar er ingekocht moet worden en er zijn duidelijke afspraken over de levering van de producten / diensten	Het is duidelijk waar er ingekocht moet worden en er zijn duidelijke afspraken gemaakt over de levering. Leveranciers worden geïntegreerd in het bestelproces	Leveranciers en medewerkers werken samen aan procesinnovatie en -ontwikkeling met betrekking tot het bestelproces en de kwaliteit van het geleverde product of dienst

Q29 Vul in:

- Welk van de weergegeven levels past **op dit moment** het best bij de inkooporganisatie waarin u werkzaam bent?
- Welk level wilt u **binnen 3 jaar** bereiken?
- Welk level wilt u in de **toekomst** bereiken? (>3 jaar)

	Level 1: Ad hoc	Level 2: Basic	Level 3: Standardised	Level 4: Integration
Welk level sluit op dit moment het beste aan bij de inkooporganisatie	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u binnen 3 jaar met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u in de toekomst met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q30 De inkooporders worden periodiek in algemene zin geanalyseerd

- Helemaal mee eens
- Mee eens —————▶ Q31
- In zekere mate
- Oneens**
- Helemaal mee oneens** —————▶ Q33

Q31 De prestaties van leveranciers worden gemeten en de prestaties worden gerapporteerd

- Helemaal mee eens
- Mee eens —————▶ Q32
- In zekere mate
- Oneens**
- Helemaal mee oneens** —————▶ Q33

Q32 Prestaties worden uitgebreid gemonitord en de rapportages/feedback wordt besproken met de leveranciers

- Helemaal mee eens
- Mee eens
- In zekere mate
- Oneens
- Helemaal mee oneens

Hieronder staat een volwassenheidsmodel weergegeven op het gebied van leveranciersprestatie



Q33 Vul in:

- Welk van de weergegeven levels past **op dit moment** het best bij de inkooporganisatie waarin u werkzaam bent?

- Welk level wilt u **binnen 3 jaar** bereiken?

- Welk level wilt u in de **toekomst** bereiken? (>3 jaar)

	Level 1: Ad hoc	Level 2: Basic	Level 3: Standardised	Level 4: Integration
Welk level sluit op dit moment het beste aan bij de inkooporganisatie	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u binnen 3 jaar met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u in de toekomst met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Part 3: Vragen over de contracten

U bent op de helft van de enquête vragen

De volgende vragen gaan over de lopende inkoopcontracten binnen uw gemeente (contractmanagement)

Q34 De contracten staan geordend en worden gemonitord
(Contracten kunnen op verschillende manieren geordend worden bijvoorbeeld op contractkenmerken, risico, waarde etc.)

- Helemaal mee eens
- Mee eens —————→ Q35
- In zekere mate
- Oneens
- Helemaal mee oneens —————→ Q38

Q35 Waarop staan de contracten geordend binnen uw inkooporganisatie?
(u kunt meerdere antwoorden aanvinken)

- Contractkenmerken
- Risico
- Waarde
- Anders, namelijk

Q36 Er is een tactische planning aanwezig waarin onder andere de benodigde acties beschreven staan die uit het monitoren naar voren zijn gekomen

- Helemaal mee eens
- Mee eens —————→ Q37
- In zekere mate
- Oneens
- Helemaal mee oneens —————→ Q38

Q37 De aanbestedingsprocedure, de afhandeling van uitzonderlijke contracten, marktontwikkelingen, betrokken risico's en de ondernomen acties worden periodiek geëvalueerd.

- Helemaal mee eens
- Mee eens
- In zekere mate
- Oneens
- Helemaal mee oneens

Hieronder staat een volwassenheidsmodel weergegeven met betrekking tot het contractmanagement proces

	Ad hoc	Basic	Standardized	Integration
Proces	Contracten zijn geïnventariseerd	De contracten zijn geordend en de contracten worden gemonitord	Er is een tactische planning waarin de benodigde acties beschreven staan die uit het monitoren naar voren zijn gekomen	Standardized level aangevuld met uitgebreide evaluatie van de aanbestedingsprocedure, afhandeling van uitzonderingen, marktontwikkelingen, betrokken risico's en de ondernomen acties.

Q38 Vul in:

- Welk van de weergegeven levels past **op dit moment** het best bij de inkooporganisatie waarin u werkzaam bent?

- Welk level wilt u **binnen 3 jaar** bereiken?

- Welk level wilt u in de **toekomst** bereiken? (>3 jaar)

	Level 1: Ad hoc	Level 2: Basic	Level 3: Standardised	Level 4: Integration
Welk level sluit op dit moment het beste aan bij de inkooporganisatie	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u binnen 3 jaar met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u in de toekomst met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q39 Alle contracten staan in hetzelfde bestand/systeem geregistreerd

- Helemaal mee eens
- Mee eens —————> Q40
- In zekere mate
- Oneens
- Helemaal mee oneens —————> Q45

Q40 De contracten staan in een centraal systeem geregistreerd met hanteerbare KPI's

- Helemaal mee eens
- Mee eens —————▶ Q41
- In zekere mate
- Oneens
- Helemaal mee oneens —————▶ Q45

Q41 In welk systeem staan de contracten geregistreerd?

Q42 Is dit hetzelfde systeem als waarin de orders geregistreerd worden?

- Ja
- Nee

Q43 In het systeem staat een overzichtelijk dashboard met leveranciersprestaties

- Helemaal mee eens
- Mee eens —————▶ Q44
- In zekere mate
- Oneens
- Helemaal mee oneens —————▶ Q45

Q44 De systemen van de hoofdleveranciers zijn geïntegreerd en er wordt samengewerkt met leveranciers aan waarde creatie

- Helemaal mee eens
- Mee eens
- In zekere mate
- Oneens
- Helemaal mee oneens

Hieronder staat een volwassenheidsmodel weergegeven met betrekking tot de systeem ondersteuning van het contractmanagement proces



Q45 Vul in:

- Welk van de weergegeven levels past **op dit moment** het best bij de inkooporganisatie waarin u werkzaam bent?

- Welk level wilt u **binnen 3 jaar** bereiken?

- Welk level wilt u in de **toekomst** bereiken? (>3 jaar)

	Level 1: Ad hoc	Level 2: Basic	Level 3: Standardised	Level 4: Integration
Welk level sluit op dit moment het beste aan bij de inkooporganisatie	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u binnen 3 jaar met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u in de toekomst met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q46 Bent u binnen de inkooporganisatie waarin u werkzaam bent op dit moment bezig met het implementeren van een systeem? Zo ja welk systeem?

Q47 Op het gebied van contracten is het duidelijk wie waarvoor verantwoordelijk is. De verantwoordelijkheden binnen contractmanagement zijn centraal belegd.

- Helemaal mee eens
- Mee eens → Q48
- In zekere mate
- Oneens
- Helemaal mee oneens → Q51

Q48 Er is voldoende capaciteit beschikbaar met betrekking tot het managen van de contracten

- Helemaal mee eens
- Mee eens → Q49
- In zekere mate
- Oneens
- Helemaal mee oneens → Q51

Q49 Er wordt een trainingsprogramma aangeboden aan de betrokken medewerkers en de medewerkers werken intensief samen

- Helemaal mee eens
- Mee eens → Q49
- In zekere mate
- Oneens
- Helemaal mee oneens → Q51

Q50 Er is een continue samenwerking tussen medewerkers en andere betrokken stakeholders op het gebied van innovatieve oplossingen en waarde creatie

- Helemaal mee eens
- Mee eens
- In zekere mate
- Oneens
- Helemaal mee oneens

Hieronder staat een volwassenheidsmodel weergegeven met betrekking tot de organisatie, medewerkers en samenwerking binnen het contractmanagement proces

	Ad hoc	Basic	Standardized	Integration
Organisatie, medewerkers & samenwerking	Verantwoordelijkheid contractmanagement is centraal belegd	Verantwoordelijkheid van contractmanagement is centraal belegd en er is voldoende kwalitatieve capaciteit voor het managen van de contracten	Verantwoordelijkheden zijn centraal belegd en er is voldoende kwalitatieve capaciteit. Er wordt een trainingsprogramma aangeboden en medewerkers werken intensief samen	Continue samenwerking tussen werknemers en stakeholders op het gebied van innovatieve oplossingen en waardecreatie

Q51 Vul in:

- Welk van de weergegeven levels past **op dit moment** het best bij de inkooporganisatie waarin u werkzaam bent?

- Welk level wilt u **binnen 3 jaar** bereiken?

- Welk level wilt u in de **toekomst** bereiken? (>3 jaar)

	Level 1: Ad hoc	Level 2: Basic	Level 3: Standardised	Level 4: Integration
Welk level sluit op dit moment het beste aan bij de inkooporganisatie	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u binnen 3 jaar met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u in de toekomst met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q52 Leveranciers worden gecontacteerd bij het niet nakomen van afspraken, en bij het verlengen en opzeggen van een contract

- Helemaal mee eens
- Mee eens → Q53
- In zekere mate
- Oneens
- Helemaal mee oneens → Q56

Q53 De prestaties van leveranciers worden gemeten

- Helemaal mee eens
- Mee eens → Q54
- In zekere mate
- Oneens
- Helemaal mee oneens → Q56

Q54 Er zijn heldere KPI's (kritische prestatie indicatoren) opgesteld voor het meten van de leveranciers prestaties. Daarnaast zijn er vaste afspraken over de evaluatie hiervan en eventuele beloningen

- Helemaal mee eens
- Mee eens → Q55
- In zekere mate
- Oneens
- Helemaal mee oneens → Q56

Q55 Er is een grote betrokkenheid van leveranciers en verbetering van leveranciersprestaties worden continue aangemoedigd

- Helemaal mee eens
- Mee eens
- In zekere mate
- Oneens
- Helemaal mee oneens

Hieronder staat een volwassenheidsmodel weergegeven met betrekking tot de leveranciersprestaties binnen contractmanagement

	Ad hoc	Basic	Standardized	Integration
Leveranciers prestatie	Leveranciers worden gecontacteerd bij het niet nakomen van afspraken en bij het verlengen en opzeggen	Naast het contacteren worden de prestaties van leveranciers gemeten gebaseerd op de contractuitnutting	Leveranciersprestaties worden gerapporteerd en verbeterd. Er zijn vaste afspraken over evaluatie en beloning	Ter aanvulling op de vorige levels; verhoog de betrokkenheid van leveranciers en moedig continue verbetering van de leveranciersprestaties aan

Q56 Vul in:

- Welk van de weergegeven levels past **op dit moment** het best bij de inkooporganisatie waarin u werkzaam bent?

- Welk level wilt u **binnen 3 jaar** bereiken?

- Welk level wilt u in de **toekomst** bereiken? (>3 jaar)

	Level 1: Ad hoc	Level 2: Basic	Level 3: Standardised	Level 4: Integration
Welk level sluit op dit moment het beste aan bij de inkooporganisatie	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u binnen 3 jaar met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welk level wilt u in de toekomst met de inkooporganisatie bereiken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Part 4: Vragen over specificaties voor een inkoopstelsel

De volgende vragen gaan over de benodigde systeem specificaties per volwassenheidsniveau.

Het p2p proces

(voor extra informatie over de verschillende niveaus staat onder deze vraag het p2p volwassenheidsmodel nogmaals weergegeven)

Q57	Vul in:	Vul in:	Vul in:
	Welke systeem specificaties heeft u op dit moment ter beschikking	Welke behoefte heeft u qua systeem specificaties op dit moment?	Welke behoefte aan systeem specificaties denkt u te hebben bij een volgend volwassenheidsniveau?
E-catalogus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
E-bestellen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
E-ontvangst	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Uren/onkostendeclaratie	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dispute management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3- way matching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Order prestaties	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
E-factureren/betaling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Integratie met leveranciersstelsel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geen van allen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Anders namelijk <input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Anders namelijk <input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Ad hoc	Basic	Standardized	Integration
Organisatie & verantwoording	Gedecentraliseerde organisatie waarin business units de meeste processen bezitten	Duidelijk beleid waarin beschreven wordt wie gemachtigd is om wat in te kopen en wanneer gecentraliseerde toestemming noodzakelijk is	Gecentraliseerde organisatie met een duidelijk beleid dat alle verantwoordelijkheden van het p2p-proces beschrijft	Gecentraliseerde organisatie waarbij de verantwoordelijkheden van alle belangrijke processen beschreven staan en ook daadwerkelijk genomen worden
Systemen/ monitoring	Handmatige processen zonder systeemondersteuning	Facturen worden allemaal geregistreerd in hetzelfde systeem	Alle producten en diensten worden via hetzelfde systeem ingekocht en de facturen worden automatisch in het systeem opgeslagen	Er is een automatisch systeem dat geïntegreerd is met de systemen van de hoofdleveranciers
Proces & leveranciers betrokkenheid/ relatie	Er is geen gedwongen winkelnering	Het is duidelijk waar er ingekocht moet worden en er zijn duidelijke afspraken over de levering van de producten / diensten	Het is duidelijk waar er ingekocht moet worden en er zijn duidelijke afspraken gemaakt over de levering. Leveranciers worden geïntegreerd in het bestelproces	Leveranciers en medewerkers werken samen aan procesinnovatie en -ontwikkeling
Prestatie meting & tevredenheid	Weinig tot geen prestatie meting, rapportage en bewaking	Inkooporders worden over het algemeen bekeken en beoordeeld	Prestatiemonitoring en rapportage van leveranciers	Uitgebreide prestatie monitoring; rapportages/feedback worden besproken met de leveranciers

Contractmanagement

(voor extra informatie over de verschillende levels staat onder deze vraag het contractmanagement volwassenheidsmodel nogmaals weergegeven)

Q58	Vul in:	Vul in:	Vul in:
	Welke systeem specificaties heeft u op dit moment ter beschikking?	Welke behoefte heeft u qua systeem specificaties op dit moment?	Welke behoefte aan systeem specificaties denkt u te hebben bij een volgend volwassenheidslevel?
Contractimport	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Authoring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prestatiemeting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contractvoorwaarde Analyse	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Uitgebreide signaleringen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dynamisch dashboard	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ordergeneratie vanuit contract	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Integratie met leveranciers systemen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leverancierskwalificatie	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Performance meting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Marktonderzoek	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Integratie met leveranciers systeem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geen van allen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Anders namelijk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="text"/>			

	Ad hoc	Basic	Standardized	Integration
Proces	Contracten zijn geïnventariseerd	De contracten zijn geordend en de contracten worden gemonitord	Er is een tactische planning waarin de benodigde acties beschreven staan die uit het monitoren naar voren zijn gekomen	Uitgebreide evaluatie van de aanbestedingsprocedure, afhandeling van uitzonderingen, marktontwikkelingen, betrokken risico's en de ondernomen acties
Systemen	Contracten zijn geregistreerd	Er is een digitale ondersteuning aanwezig met beheersbare KPI's	De geordende contracten worden gemonitord en het systeem geeft een overzichtelijk dashboard weer van de leveranciersprestaties	Geïntegreerde systemen met hoofdleveranciers en er wordt samengewerkt met leveranciers aan waardecreatie
Organisatie, medewerkers & samenwerking	Verantwoordelijkheid contractmanagement is centraal belegd	Verantwoordelijkheid van contractmanagement is centraal belegd en er is voldoende kwalitatieve capaciteit voor het managen van de contracten	Verantwoordelijkheden zijn centraal belegd en er is voldoende kwalitatieve capaciteit. Er wordt een trainingsprogramma aangeboden en medewerkers werken intensief samen	Continue samenwerking tussen werknemers en stakeholders op het gebied van innovatieve oplossingen en waardecreatie
Leveranciers prestatie	Leveranciers worden gecontacteerd bij het niet nakomen van afspraken en bij het verlengen en opzeggen	Naast het contacteren worden de prestaties van leveranciers gemeten gebaseerd op de contractuitnutting	Leveranciersprestaties worden gerapporteerd en verbeterd. Er zijn vaste afspraken over evaluatie en beloning	Ter aanvulling op de vorige levels; verhoog de betrokkenheid van leveranciers en moedig continue verbetering van de leveranciersprestaties aan

Part 5: Vragen over organisatiecultuur, kennis, tijd en budget

Q59 Welke van de onderstaande antwoordmogelijkheden beschrijft de organisatie binnen de gemeente waarin u werkzaam bent het beste?

- De organisatie heeft een zeer persoonlijk karakter. Ze heeft veel weg van een grote familie. De mensen lijken veel met elkaar gemeen te hebben.
- De organisatie is zeer dynamisch en er heerst een echte ondernemingsgeest. De mensen zijn bereid hun nek uit te steken en risico's te nemen
- De organisatie is sterk resultaatgericht. Het werk af zien te krijgen is de grootste zorg. De mensen zijn erg competitief en gericht op het boeken van resultaten
- De organisatie is strak geleid en gestructureerd. Formele processen bepalen in het algemeen wat de mensen doen.

Q60 Uit onderzoek is gebleken dat er binnen de gemeente veel regels en procedures aanwezig zijn die opgevolgd moeten worden met als doel de instandhouding van een soepel draaiende organisatie.

Vul in in hoeverre u het eens bent met de volgende stelling:

Deze regels en procedures maakt het lastig om te werken aan proces optimalisatie omdat er vrij beperkte beweegmogelijkheden zijn binnen de bestaande regelgeving en procedures.

- Helemaal mee eens
- Mee eens
- In zekere mate
- Oneens
- Helemaal mee oneens

Q61 Binnen onze gemeente is er voldoende budget en tijd van medewerkers beschikbaar voor het optimaliseren van het inkoopproces

- Helemaal mee eens
- Mee eens
- In zekere mate
- Oneens
- Helemaal mee oneens

Q62 Binnen onze gemeente is er voldoende kennis aanwezig om het inkoopproces te optimaliseren?

(voornamelijk gericht op het p2p proces en contractmanagement)

- Helemaal mee eens
- Mee eens
- In zekere mate
- Oneens
- Helemaal mee oneens

Q63 Zijn er uitdagingen aanwezig voor het optimaliseren van contractmanagement en het p2p proces? Zo ja, welke?

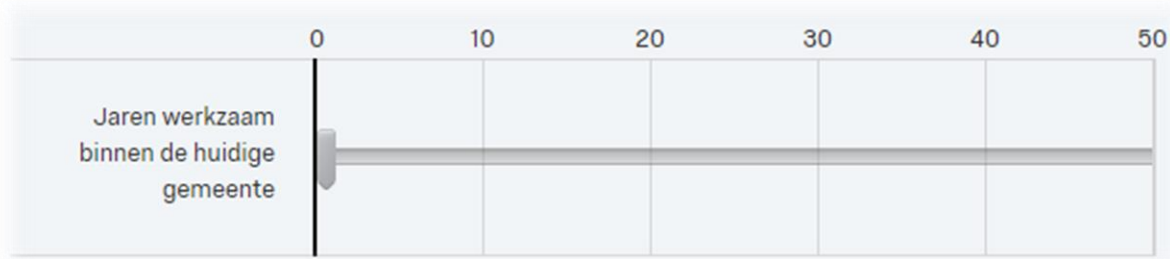
Part 6: Algemene vragen

Hieronder staan nog een aantal algemene vragen beschreven

Q64 Binnen welke provincie valt de gemeente waarin u werkzaam bent?

- Groningen
- Friesland
- Drenthe
- Overijssel
- Flevoland
- Gelderland
- Utrecht
- Noord-Brabant
- Zuid-Holland
- Limburg
- Noord-Holland
- Zeeland

Q65 Hoelang bent u al werkzaam binnen de huidige gemeente waarin u op dit moment werkzaam bent?



Q66 Wat is uw huidige positie binnen de gemeente?

Q67 Werkt u op het gebied van inkoop samen met andere gemeenten?

- Ja, als u wilt kunt u hier onder invullen met welke gemeente u samenwerkt

- Nee

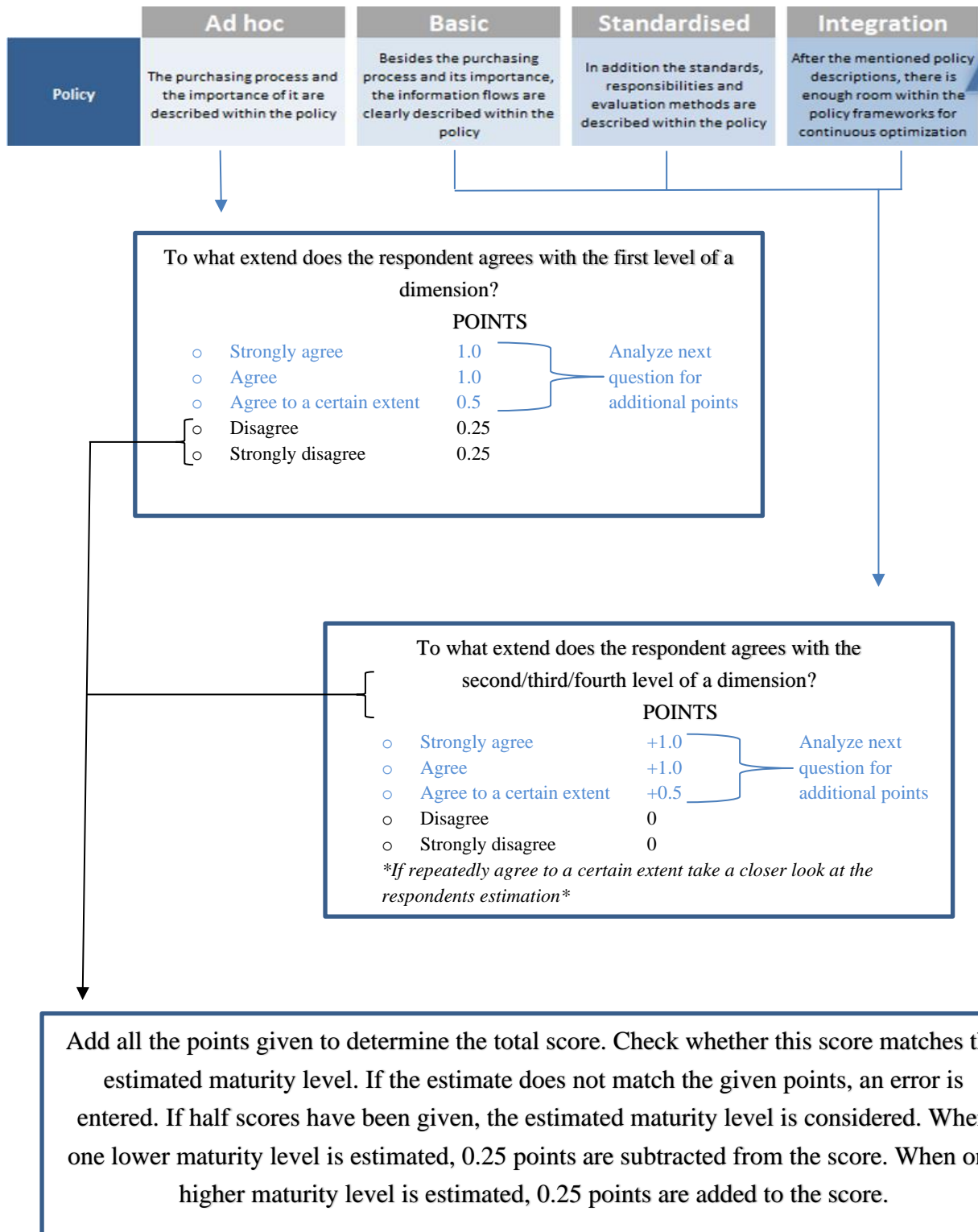
Q68 Ik had genoeg kennis om deze vragenlijst in te vullen

- Helemaal mee eens
- Mee eens
- In zekere mate
- Oneens
- Helemaal mee oneens

Q69 Ik wil u hartelijk bedanken voor het invullen van de vragenlijst. Wenst u de resultaten van dit onderzoek te ontvangen? Zo ja laat dan hier uw e-mail adres achter

End of survey

Appendix 6, determining the scores



Appendix 7, Descriptive statistics and correlation table

		Mean	Standard deviation
Budget & Time	Fully agree	2,25	0,11
	Agree	1,53	0,44
	In certain extend	1,67	0,43
	Disagree	1,67	0,33
	Fully disagree	1,47	0,35
Knowledge	Fully agree	1,38	0,66
	Agree	1,76	0,27
	In certain extend	1,59	0,32
	Disagree	1,5	0,38
	Fully disagree	-	-
Culture	Clan Culture	1,52	0,38
	Hierarchical culture	1,73	0,47
	Ad hoc culture	1,85	0,24
	Market culture	1,60	0,39
Size	Large	1,67	0,44
	Medium sized	1,48	0,26
	Small	1,80	0,37

Figure 7.1, m and sd of the factors and maturities

Figure 7.2, Correlation table of the ordinal factor variables and maturity

Correlations

			Volw.level. inkoopproces	Knowledge	Budget_time	Size2
Spearman's rho	Volw.level.inkoopproces	Correlation Coefficient	1,000	-,033	,123	-,048
		Sig. (1-tailed)	.	,413	,162	,357
		N	68	46	67	61
	Knowledge	Correlation Coefficient	-,033	1,000	,172	-,094
		Sig. (1-tailed)	,413	.	,129	,284
		N	46	46	45	39
	Budget_time	Correlation Coefficient	,123	,172	1,000	-,051
		Sig. (1-tailed)	,162	,129	.	,351
		N	67	45	67	60
	Size2	Correlation Coefficient	-,048	-,094	-,051	1,000
		Sig. (1-tailed)	,357	,284	,351	.
		N	61	39	60	61

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Volw.level.inkoopproces	69	,75	2,50	1,6213	,38704
Volw.level.algemeen	66	,75	3,75	2,1345	,69625
Volw.level.p2p	68	,50	2,50	1,6641	,42222
Volw.level.contracten	69	,25	2,50	1,0993	,49657
Valid N (listwise)	65				

Figure 7.3, Descriptive statistics current maturity level

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ambitielevel3jaar	67	1,75	4,00	2,7612	,41613
amb.l.3jr.algemeen	67	2,00	4,00	3,2090	,53050
amb.l.3jr.p2p	68	1,25	4,00	2,5846	,48409
amb.l.3jr.contract	68	1,25	4,00	2,3897	,54187
Valid N (listwise)	67				

Figure 7.4, Descriptive statistics desired maturity level in 3 years

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ambitieleveltoekomst	67	2,50	4,00	3,4030	,42852
amb.l.toe.algemeen	67	2,00	4,00	3,7500	,43301
amb.l.toe.p2p	68	1,25	4,00	3,1618	,61049
amb.l.toe.contract	68	1,50	4,00	3,1618	,67021
Valid N (listwise)	67				

Figure 7.5, Descriptive statistics desired maturity level future

Appendix 8, open answers survey

“Are there challenges for optimizing contract management and the p2p process? If yes which one?”

“Culture and (lack of ...) entrepreneurial spirit of internal employees, looking for the ultimate assurance of results, obligations with the contractor and not with the client, failure to provide entrepreneurial freedom with contracts, internal culture of accountability, contracts often on unit / department level instead of municipality wide, a lot of energy is lost in bureaucracy instead of being allowed to make mistakes and learn from it. Promote it when you develop something new together with a supplier, so that all suppliers see that you are innovating together. ”

“Contracting (via tenders) is one thing, but managing the contracts thus concluded is another. There is structurally too little capacity (priority, manpower and money) for this. ”

"The cooperation and conservative attitude of the financial department Furthermore, investing in the current package (GFS) is also a challenge. People (management) do not always see the profit / efficiency"

“Many challenges to create easy-to-understand system solutions and to let systems communicate with each other; not enough budget available to invest in systems and training for employees. insufficiently experienced contract managers available; still a lot of ignorance about what can be achieved with good contract management (financially as well as college objectives); organizational structure hinders the implementation of optimal contract management and an efficient p2p process; the results of good contract management are still insufficiently visible.”

“Time and capacity are challenges to further optimize the purchasing process and further develop contract management.”

“A more user-friendly p2p system and/or reports. Attitude and behavior of the employees”

“Departments' usually consist of multidisciplinary single-seekers. Capacity is therefore always a core problem. The purchasing process is seen as time consuming. But contract management still has to start ...”

“Yes, there is a great need for knowledge and capacity to expand this”

“The board must be convinced to work in a process-oriented manner. Growing into a more mature purchasing organization requires a culture change, for which money and capacity must become available. However, administratively, it is preferable to invest in results that are visible to the inhabitants of the municipality.”

“The challenge at our municipality is mainly in time and responsibility. Contracts are draw up after a purchasing process and are often no longer managed. Purchasing department believes that the departments are responsible, the departments that the purchasing department is responsible. Both parties do not have time and do not give it priority, unless there are conflicts with the supplier.”

“The ICT architecture. The different types of services, namely the social domain and other services.”

“The limited time and capacity and sometimes the willingness to change.”

“Decentralized / coordinated model within government.”

“We are a small rural town with ambitions. Purchasing digitization is high on the agenda. However, we often operate within regional purchasing with other municipalities. The cooperating municipalities all have different systems / software. The majority of local purchasing is invested locally, a few municipalities have a central purchasing organization. In practice it tends to determine that the large municipalities determine and that the small municipalities follow. That makes it difficult to give substance now and to prepare choices for the digitization of local purchasing, because additional purchasing also transcends the municipality.”

“Within the organization more towards professional purchasing with sufficient financial and personnel capacity as a precondition”

“Negometrix contract and supplier management is currently being implemented. It is a challenge to get the line, which is responsible for the contract and supplier management of own contracts.”

“* cooperation * egos of employees * there is more thought in 'contract management as a goal' than as a means * what is the best system? Multiple requirements; multiple systems, but not all systems meet the requirements; there should always be skippered. No system is perfect.”

“We are currently working on contract management. We want to make a move in contract management within three years.”

“I think: Culture (more process-oriented and more formal) realize sufficient budget for systems capacity (capacity and / or quality) for implementation of contract management.”

“A municipality is not a production company. We purchase in very diverse markets (ICT, hiring, civil engineering, but also healthcare where we have contracted hundreds of suppliers). For example, the process of purchasing healthcare and hiring people is much more automated than in other markets. Most of what is purchased concerns services and not products. This is much more difficult to automate and manage. We also have many large one-off projects (construction and maintenance). And a total of hundreds of suppliers who sometimes only receive an invoice once or twice a year. A municipality also has many more contracts to manage than just purchasing contracts. That is why contract management is complicated. Think of renting / letting real estate, but also agreements regarding land transactions, so contract management is not a central task of the purchasing department.”

“Decentralized purchasing with central control / monitoring from the purchasing department is a challenge.”

“Social domain contracts are concluded in collaboration. Little grip on agreements”

“Contract management in general”

“In the first instance, we will have to visualize the contracts in a central location. We have taken this step several times, but to date there is no central place where contracts are in view throughout the organization. This is a risk.”

“Yes, enough .. Anyway where is the responsibility and the sense of urgency.”

“Purchasing and adjusting systems is not the problem, technology can do everything. Ultimately it is the people who have to do it. Change is always difficult within an organization. This is the greatest challenge.”

“We are missing a good system that supports us to take the next step.”

“We are working on the optimization of the P2P process. Contract management is not properly arranged. The contracts are not centrally registered and are not or not properly managed. Contract managers for the Social Domain are not contract managers for other contracts.”

“Yes, - balancing of interests – deployment”

“Certainly. Contracting (through tenders) is one thing, but managing the contracts thus concluded is another. There is structurally too little capacity (priority, manpower and money) for this.”

“Capacity and knowledge”

“Budget and time of employees. Willingness of employees ('I don't have time' / 'something new again?') Communication; Getting along with the organization; Enthusiasm ('I'm doing well now')”

“Lack of capacity; Utility and necessity of the P2P process.”

“The challenge to set it up properly”

“Yes, colleagues still have too often a personal archive of contracts. This must be arranged centrally.”

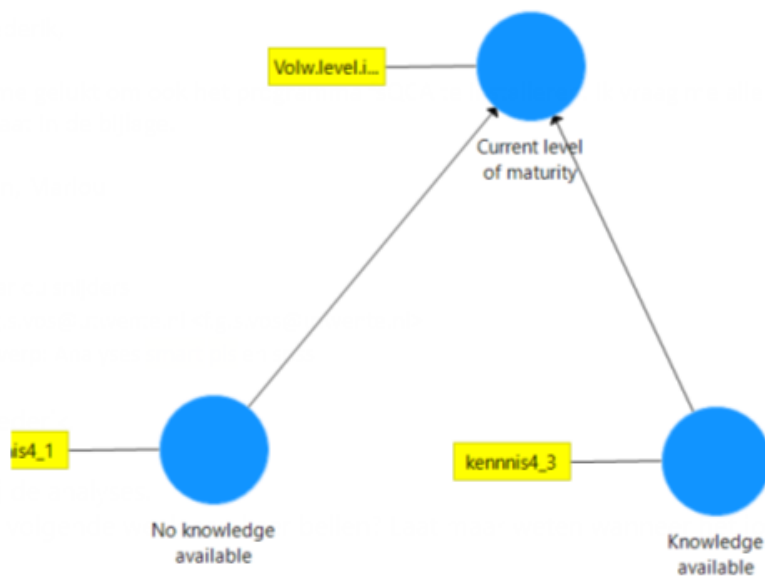
Appendix 9, statistical testing

9.1 PLS path modeling

Despite the fact that the sample size is very small, we have tried to apply PLS path modeling to check which variables have a significant influence on the current maturity level of a municipality. When municipalities indicate that there is enough knowledge available it has a significant positive influence on the level of maturity of the purchasing process.

Furthermore no significant results have been obtained. In this appendix a few analysis are shown.

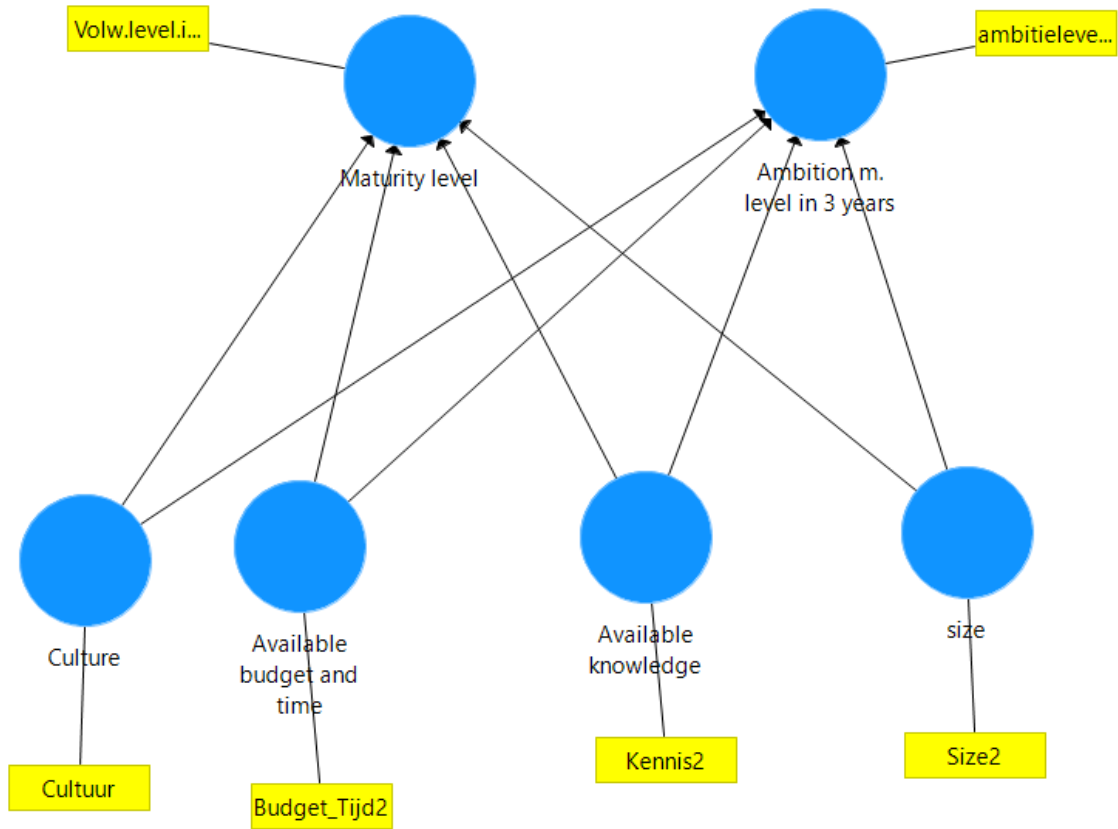
Effects between the availability of knowledge and the maturity level



Path Coefficients

	Original Sa...	Sample Me...	Standard D...	T Statistics (...)	P Values
Knowledge ...	0.256	0.257	0.151	1.700	0.090
No knowled...	0.226	0.232	0.149	1.522	0.129

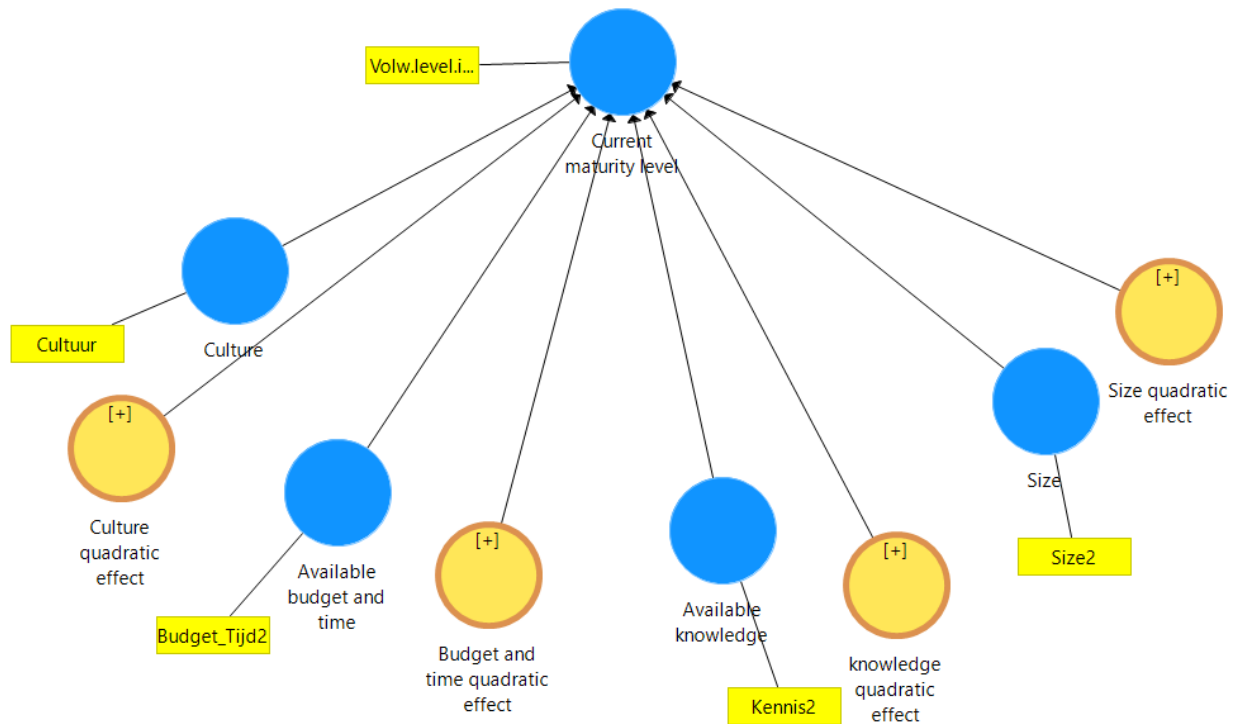
Single effects



Path Coefficients

Mean, STDEV, T-Values, P-Values	Confidence Intervals	Confidence Intervals Bias Corrected	Samples	
				Original Sa... Sample Me... Standard D... T Statistics (... P Values
Available budget and time -> Ambition m. level in 3 years				-0.198 -0.200 0.118 1.675 0.095
Available budget and time -> Maturity level				0.082 0.076 0.119 0.693 0.489
Available knowledge -> Ambition m. level in 3 years				0.066 0.073 0.118 0.558 0.577
Available knowledge -> Maturity level				0.012 -0.008 0.137 0.084 0.933
Culture -> Ambition m. level in 3 years				-0.039 -0.033 0.114 0.338 0.735
Culture -> Maturity level				-0.061 -0.064 0.103 0.592 0.554
size -> Ambition m. level in 3 years				0.031 0.027 0.126 0.249 0.803
size -> Maturity level				0.169 0.176 0.141 1.194 0.233

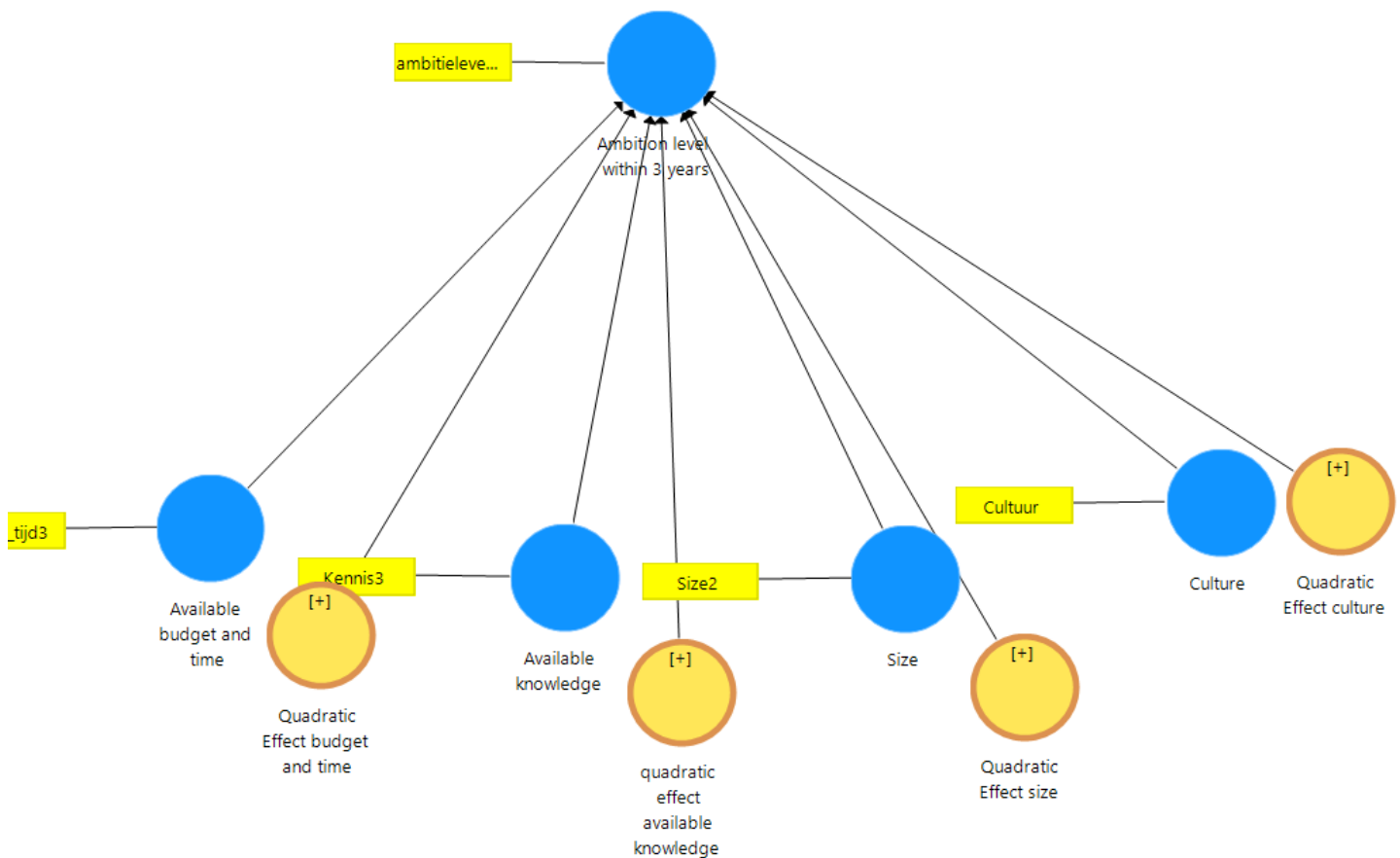
Quadratic effects current maturity



Path Coefficients

Mean, STDEV, T-Values, P-Values	Confidence Intervals	Confidence Intervals Bias Corrected	Samples		
	Original Sa...	Sample Me...	Standard D...	T Statistics (...)	P Values
Available budget and time -> Current maturity level	0.084	0.085	0.116	0.725	0.469
Available knowledge -> Current maturity level	0.031	0.031	0.166	0.185	0.853
Budget and time quadratic effect -> Current maturity level	-0.121	-0.161	0.136	0.893	0.372
Culture -> Current maturity level	0.233	0.208	0.209	1.118	0.264
Culture quadratic effect -> Current maturity level	-0.333	-0.304	0.227	1.468	0.143
Size -> Current maturity level	0.043	0.059	0.144	0.303	0.762
Size quadratic effect -> Current maturity level	0.121	0.107	0.138	0.878	0.381
knowledge quadratic effect -> Current maturity level	0.267	0.276	0.110	2.412	0.016

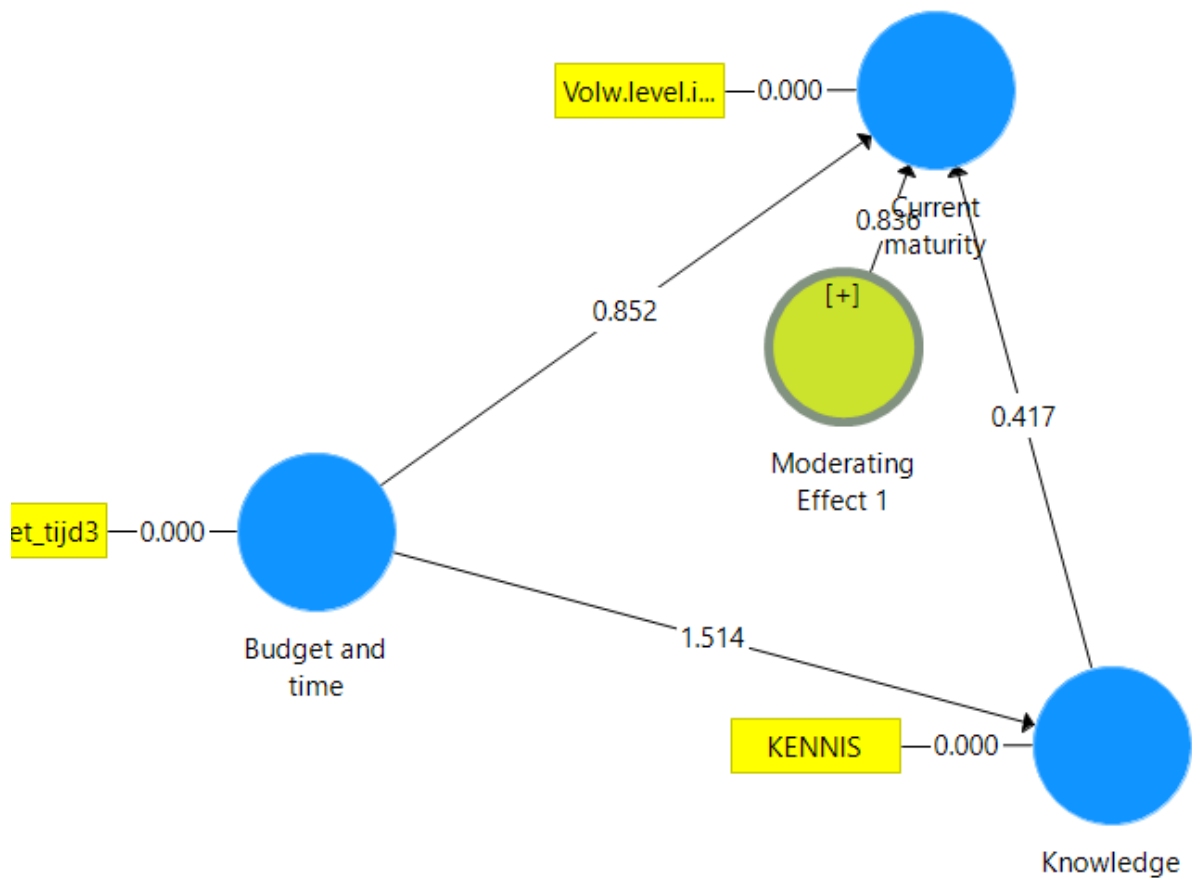
Quadratic effects desired maturity level within 3 years



Path Coefficients

Mean, STDEV, T-Values, P-Values	Confidence Intervals	Confidence Intervals Bias Corrected	Samples	Copy to CI	
	Original Sa...	Sample Me...	Standard D...	T Statistics (...)	P Values
Available budget and time -> Ambition level within 3 years	-0.203	-0.214	0.212	0.958	0.338
Available knowledge -> Ambition level within 3 years	-0.081	-0.057	0.154	0.526	0.599
Culture -> Ambition level within 3 years	0.072	0.045	0.195	0.367	0.714
Quadratic Effect budget and time -> Ambition level within 3 years	-0.011	-0.014	0.165	0.067	0.947
Quadratic Effect culture -> Ambition level within 3 years	-0.275	-0.250	0.213	1.295	0.196
Quadratic Effect size -> Ambition level within 3 years	-0.273	-0.273	0.155	1.760	0.079
Size -> Ambition level within 3 years	0.143	0.138	0.164	0.875	0.382
quadratic effect available knowledge -> Ambition level within 3 years	-0.296	-0.296	0.136	2.171	0.030

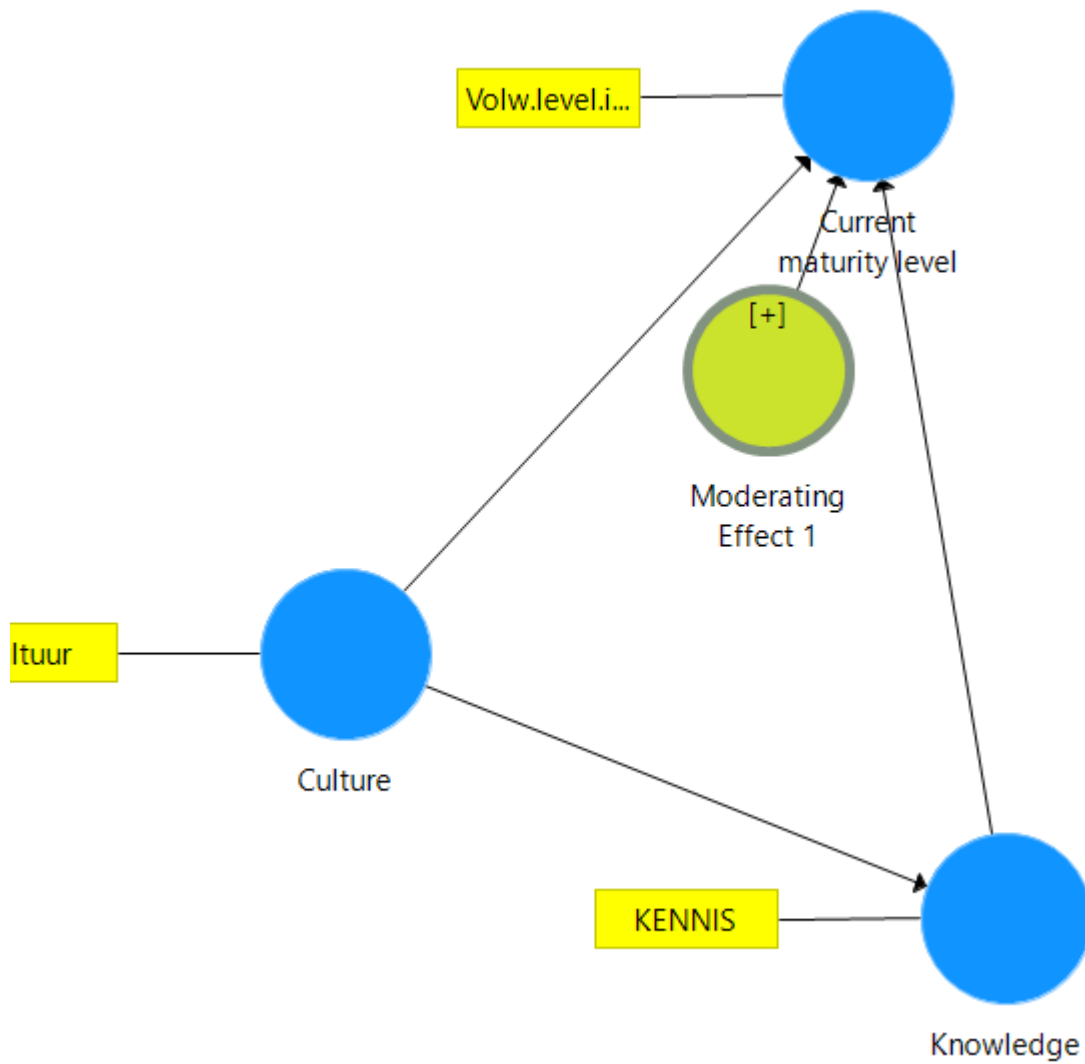
Moderating effects



Path Coefficients

	Mean, STDEV, T-Values, P-Values	Confidence Intervals	Confidence Intervals Bias Corrected	Sample	
	Original Sa...	Sample Me...	Standard D...	T Statistics (...)	P Values
Budget and time -> Current maturity	-0.083	-0.088	0.100	0.833	0.406
Budget and time -> Knowledge	-0.203	-0.187	0.135	1.502	0.134
Knowledge -> Current maturity	-0.057	-0.054	0.141	0.401	0.688
Moderating Effect 1 -> Current maturity	-0.106	-0.090	0.126	0.838	0.402

Moderating effect 1 = dependent variable “current maturity level” / independent variable: “knowledge” / Moderator: “budget and time”



Path Coefficients

Mean, STDEV, T-Values, P-Values	Confidence Intervals	Confidence Intervals Bias Corrected	Samples		
	Original Sa...	Sample Me...	Standard D...	T Statistics (...)	P Values
Culture -> Current maturity level	-0.021	-0.031	0.104	0.201	0.841
Culture -> Knowledge	-0.042	-0.046	0.111	0.383	0.702
Knowledge -> Current maturity level	-0.029	-0.049	0.173	0.167	0.867
Moderating Effect 1 -> Current maturity le...	0.034	-0.002	0.186	0.181	0.857

Moderating effect 1 = dependent variable “current maturity level” / independent variable: “knowledge” / Moderator: “culture”

9.2 Normality check dependent variables

In figure 1 the Q plot of the current maturity level is shown. The dots are close to the expected normal distribution line, so there can be concluded that the variable current maturity level is normal distributed. When looking at figure 2 the Q plot of the desired level of maturity within 3 years is shown. In this case the dots are also close to the expected normal distribution line, so there can be concluded that the variable desired level of maturity within 3 years is also normal distributed.

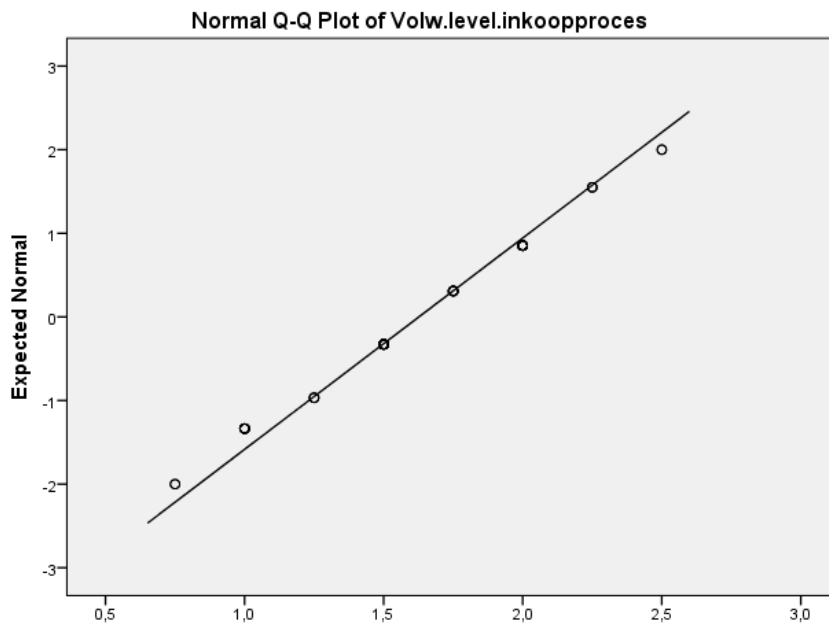


Figure 1, Q plot current maturity level

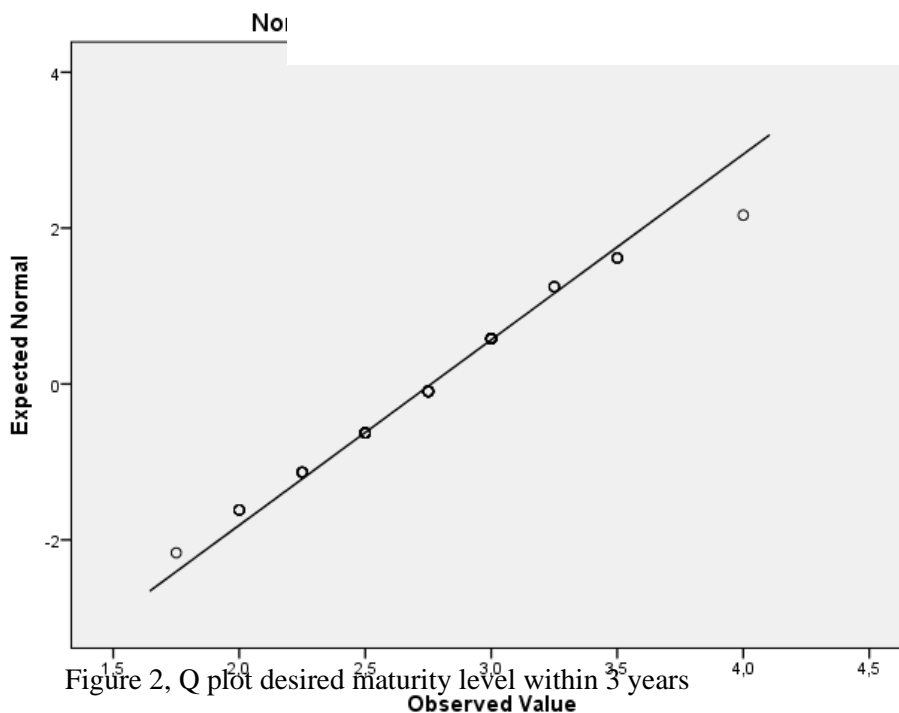


Figure 2, Q plot desired maturity level within 3 years

9.3 Spss results MANOVA

Levene's Test of Equality of Error Variances^a

	F	df1	df2	Sig.
Volw.level.inkoopproces	1,844	27	14	,115
ambitielevel3jaar	2,819	27	14	,023

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Budget_TIJD + KENNIS + Cultuur + Budget_TIJD * KENNIS + Budget_TIJD * Cultuur + KENNIS * Cultuur + Budget_TIJD * KENNIS * Cultuur

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	Volw.level.inkoopproces	4,726 ^a	27	,175	3,137	,014
	ambitielevel3jaar	5,358 ^b	27	,198	4,135	,004
Intercept	Volw.level.inkoopproces	58,951	1	58,951	1056,393	,000
	ambitielevel3jaar	172,199	1	172,199	3588,144	,000
Budget_TIJD	Volw.level.inkoopproces	,080	3	,027	,478	,703
	ambitielevel3jaar	,159	3	,053	1,105	,380
KENNIS	Volw.level.inkoopproces	,740	3	,247	4,419	,022
	ambitielevel3jaar	1,060	3	,353	7,363	,003
Cultuur	Volw.level.inkoopproces	,381	3	,127	2,278	,124
	ambitielevel3jaar	1,235	3	,412	8,579	,002
Budget_TIJD * KENNIS	Volw.level.inkoopproces	1,440	6	,240	4,301	,012
	ambitielevel3jaar	1,097	6	,183	3,811	,018
Budget_TIJD * Cultuur	Volw.level.inkoopproces	,621	4	,155	2,783	,068
	ambitielevel3jaar	,687	4	,172	3,581	,033
KENNIS * Cultuur	Volw.level.inkoopproces	,538	4	,134	2,408	,099
	ambitielevel3jaar	,741	4	,185	3,861	,026
Budget_TIJD * KENNIS * Cultuur	Volw.level.inkoopproces	,426	1	,426	7,636	,015
	ambitielevel3jaar	,745	1	,745	15,524	,001
Error	Volw.level.inkoopproces	,781	14	,056		
	ambitielevel3jaar	,672	14	,048		
Total	Volw.level.inkoopproces	113,188	42			
	ambitielevel3jaar	312,750	42			
Corrected Total	Volw.level.inkoopproces	5,507	41			
	ambitielevel3jaar	6,030	41			

a. R Squared = ,858 (Adjusted R Squared = ,585)

b. R Squared = ,889 (Adjusted R Squared = ,674)

Multiple Comparisons

Tukey HSD

Dependent Variable	(I) kennis vraag	(J) kennis vraag	Mean Difference (I-J)	Std. Error	Sig.	90% Confidence Interval	
						Lower Bound	Upper Bound
Volw.level.inkoopproces	Helemaal mee eens	Mee eens	-,3594*	,13206	,070	-,6921	-,0267
		In zekere mate	-,2250	,13975	,405	-,5771	,1271
		Oneens	-,1250	,13639	,797	-,4686	,2186
	Mee eens	Helemaal mee eens	,3594*	,13206	,070	,0267	,6921
		In zekere mate	,1344	,09523	,513	-,1055	,3743
		Oneens	,2344*	,09021	,087	,0071	,4616
	In zekere mate	Helemaal mee eens	,2250	,13975	,405	-,1271	,5771
		Mee eens	-,1344	,09523	,513	-,3743	,1055
		Oneens	,1000	,10115	,758	-,1548	,3548
	Oneens	Helemaal mee eens	,1250	,13639	,797	-,2186	,4686
		Mee eens	-,2344*	,09021	,087	-,4616	-,0071
		In zekere mate	-,1000	,10115	,758	-,3548	,1548
ambitielevel3jaar	Helemaal mee eens	Mee eens	-,1094	,12246	,809	-,4179	,1991
		In zekere mate	-,2250	,12960	,343	-,5515	,1015
		Oneens	,0625	,12648	,959	-,2561	,3811
	Mee eens	Helemaal mee eens	,1094	,12246	,809	-,1991	,4179
		In zekere mate	-,1156	,08831	,572	-,3381	,1068
		Oneens	,1719	,08366	,215	-,0389	,3826
	In zekere mate	Helemaal mee eens	,2250	,12960	,343	-,1015	,5515
		Mee eens	,1156	,08831	,572	-,1068	,3381
		Oneens	,2875*	,09380	,037	,0512	,5238
	Oneens	Helemaal mee eens	-,0625	,12648	,959	-,3811	,2561
		Mee eens	-,1719	,08366	,215	-,3826	,0389
		In zekere mate	-,2875*	,09380	,037	-,5238	-,0512

Based on observed means.

The error term is Mean Square(Error) = ,048.

*. The mean difference is significant at the 0,1 level.

Multiple Comparisons

Tukey HSD

Dependent Variable	(I) Cultuur vraag	(J) Cultuur vraag	Mean Difference (I-J)	Std. Error	Sig.	90% Confidence Interval	
						Lower Bound	Upper Bound
Volw.level.inkoopproces	Clan culture	Ad hoc culture	-,2768*	,09815	,059	-,5240	-,0295
		Market culture	,0107	,09076	,999	-,2179	,2394
		Hierarchical culture	-,2143	,14580	,480	-,5816	,1530
	Ad hoc culture	Clan culture	,2768*	,09815	,059	,0295	,5240
		Market culture	,2875*	,11205	,092	,0052	,5698
		Hierarchical culture	,0625	,15993	,979	-,3404	,4654
	Market culture	Clan culture	-,0107	,09076	,999	-,2394	,2179
		Ad hoc culture	-,2875*	,11205	,092	-,5698	-,0052
		Hierarchical culture	-,2250	,15550	,493	-,6168	,1668
	Hierarchical culture	Clan culture	,2143	,14580	,480	-,1530	,5816
		Ad hoc culture	-,0625	,15993	,979	-,4654	,3404
		Market culture	,2250	,15550	,493	-,1668	,6168
ambitielevel3jaar	Clan culture	Ad hoc culture	-,2470*	,09102	,071	-,4763	-,0177
		Market culture	,1905	,08417	,154	-,0216	,4025
		Hierarchical culture	-,1429	,13521	,720	-,4835	,1978
	Ad hoc culture	Clan culture	,2470*	,09102	,071	,0177	,4763
		Market culture	,4375*	,10391	,004	,1757	,6993
		Hierarchical culture	,1042	,14831	,894	-,2695	,4778
	Market culture	Clan culture	-,1905	,08417	,154	-,4025	,0216
		Ad hoc culture	-,4375*	,10391	,004	-,6993	-,1757
		Hierarchical culture	-,3333	,14421	,142	-,6966	,0300
	Hierarchical culture	Clan culture	,1429	,13521	,720	-,1978	,4835
		Ad hoc culture	-,1042	,14831	,894	-,4778	,2695
		Market culture	,3333	,14421	,142	-,0300	,6966

Based on observed means.

The error term is Mean Square(Error) = ,048.

*. The mean difference is significant at the 0,1 level.